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ABSTRACT

An analysis of the performance of minority students in Arizona (Black, Hispanic, Native American, and Asian) is presented as one working paper in the final report by the Arizona Board of Regents' Task Force on Excellence, Efficiency and Competitiveness. Data are included for the White majority for comparison purposes. School districts are grouped in intervals of 20% minority student population, and the mean National Curve Equivalent (NCE) scores in reading comprehension, total mathematics, and total language are compared between ethnic groups, between schools, and between districts. Statistics show the following: Black and Asian students in the 99 school districts of Arizona are enrolled in districts with 0% to 20% Black or Asian students; Asian and White students score higher than the other three groups in all areas, and the mean scores do not differ significantly between years; Asian students perform as well as or better than White students; and the performance on the Stanford Achievement Test (SAT) decreases in direct relation to the increase in percentage of Hispanic students in the districts. Appended are data on the following: mean NCE for each ethnic group in all districts; mean NCE and standard deviation by ethnicity in all districts for 12th grade students, 1986 and 1987; mean NCE and standard deviation for Phoenix Union High School district schools; mean NCE for schools with large ethnic enrollments, 12th grade, 1987; and mean NCE by primary home language. (SM)

ED306793

ACADEMIC PREPARATION OF HIGH SCHOOL STUDENTS IN ARIZONA : MEAN NATIONAL CURVE EQUIVALENT SCORES (NCE) STANFORD ACHIEVEMENT TEST (SAT) 1986 - 1987

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AUGUSTUS S. COTERA

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The academic success of university students is dependent upon the academic and social preparation that they receive in primary and secondary school. Although considerable argument can be made that the preparation received in primary school is the more critical of the two experiences, this study is confined to the competency and performance of students at the secondary level, namely high school grades 9 - 12.

The main thrust of this study is an analysis of the performance of minority students in Arizona -- Black, Hispanic, Native American and Asian. However, for comparison purposes, data were also obtained for the White majority.

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Computer tapes of test scores were purchased from the Psychological Test Corporation because complete data for students in all schools in all districts were simply not available. These data were processed by the Computer Center of Northern Arizona University and the resulting compilation was then analyzed using graphical software entitled "Graph in the Box". All presentations in this report at this time are made in the form of histograms designed to provide the reader with a readily understood graphical analysis.

Although analyses were done for all grade levels, the decision was made to present primarily 12th grade test results as this grade level is the last formal school experience before students enter higher education.

In reviewing the data, the decision was made to group school districts in intervals of 20 percent minority (Black, Hispanic, Native American, and Asian) student population. Using this 20 percent interval, the mean NCE scores

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in Reading Comprehension (RC), Total Mathematics (TM) and Total Language (TL) were then compared between ethnic groups, between schools and between districts. The reader will note however, that on the histograms presented in this report, these three basic skills are listed as READ, MATH and LANG respectively.

In order to discuss the results of the study to date, histograms have been grouped into appendices which will be discussed in commentary form for the purpose of providing the reader with various relationships and significant interactions between ethnic groups and between schools and districts. One caution which must be mentioned is that although the sample size is the total population in each grade, school and district, the variability in population from year to year has not been determined. Further, it must be kept in mind that on the day the test was administered, not all students in the total population were present. Thus the "Total NCOUNT" is representative only of those students present on the day of the test.

The discussion that follows consists of comments and observations with possible implications and potential conclusions that may be made. Each set of data comprising an appendix will thus be reviewed. The reader is urged to study the histogram while reading the discussion in order to understand the data, always recognizing that his or her analysis may differ from that of the author.

Finally, all data are presently in storage in the NAU main frame computer and may be accessed with sufficient lead time for programming. In addition, most down-loaded files are available on three and one-half inch diskettes in the Board of Regents office.

APPENDIX A

MEAN NCE FOR EACH ETHNIC GROUP IN ALL DISTRICTS

The set of five graphs permits performance comparison of the five ethnic student groups in the three basic skill areas, as compiled for all school districts in Arizona.

The first graph on page A-1 compares 1987 SAT scores on the three basic skills tests for 12th grade Hispanic students ONLY. The students have been grouped by 20 percent intervals of total NCOUNT of Hispanic students in all districts. In the first bar graph of skills, the number in parenthesis following the 20 percent interval represents the number of districts in the state having between 0 and 20 percent Hispanic students. The remaining four graphs also follow this format.

Examination of this graph indicates that Hispanic students in all districts, regardless of percent NCOUNT score between the 40th and 50th decile nationally. The scores of students in the 59 districts in the first 20 percent interval may be somewhat higher than those in the other district intervals, but the statistical difference is probably not significant. In general, there appears to be a consistent performance regardless of percent NCOUNT.

In contrast, performance of Native Americans, shown in the lower graph on page A-1, indicates a definite trend of decreased performance with increase in NCOUNT. It should also be noted that the level of overall performance in the basic skills is a full decile lower than that of Hispanics.

The two graphs on page A-2 indicate that Black and Asian students in the 99 school districts of Arizona are enrolled in districts with 0-20 percent Black or Asian students. The Black students perform at the upper margin of the 40th decile, somewhere between the Hispanic and Native American students. Performance of Asian students is at the 50th decile in Reading and Language but at the 60th decile in Mathematics.

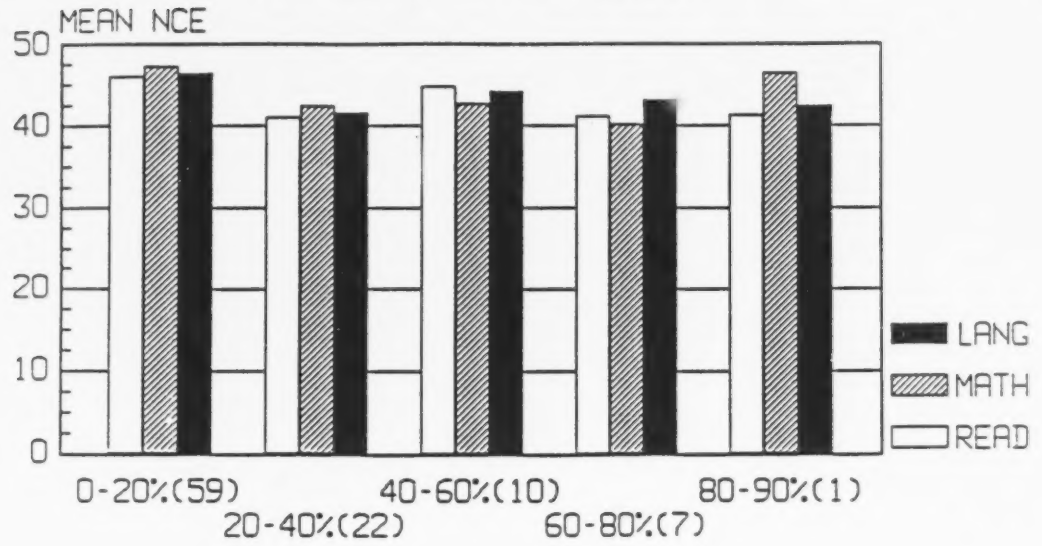
Performance of White students is depicted on the graph on page A-3 and indicates no definite variation with percent NCOUNT, although a slight difference is suggested in the 16 districts in which the percent of White students is less than 20 percent. Correspondingly, performance in the 21 districts having 60-80 percent White students also shows a somewhat higher performance level. It should be noted that in no district interval is the performance in Mathematics greater than that of the Asian group.

The major purpose in presenting the data in Appendix A is to provide the reader with an overall view of performance level within each group and the variation between groups.

APPENDIX A - APPENDICES

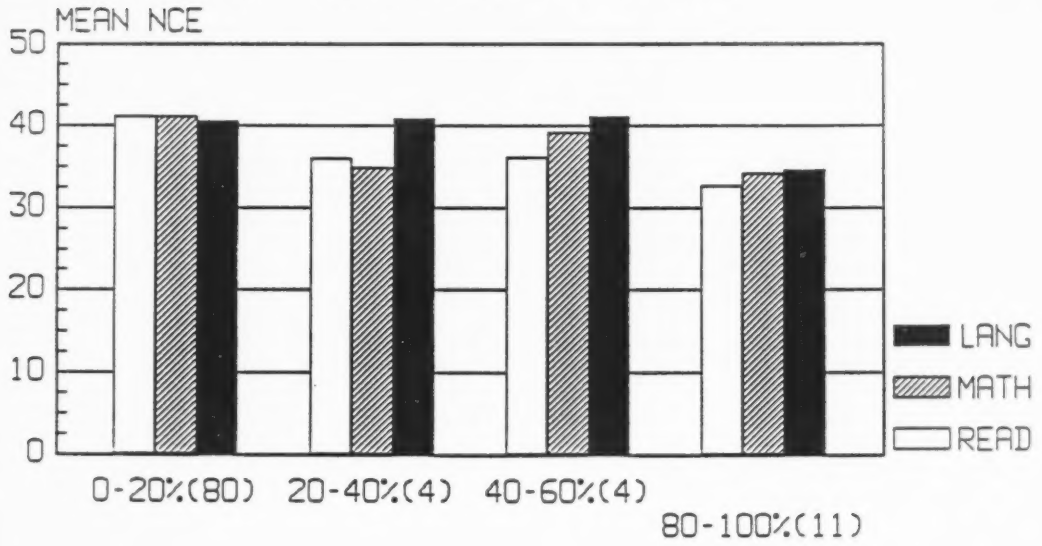
A-1	Hispanic Mean NCE	-	12th Grade	-	1987
A-1	Native American Mean NCE	-	12th Grade	-	1987
A-2	Black Mean NCE	-	12th Grade	-	1987
A-2	Asian Mean NCE	-	12th Grade	-	1987
A-3	White Mean NCE	-	12th Grade	-	1987

HISPANIC MEAN NCE - 12TH GRADE 1987
ALL DISTRICTS IN ARIZONA



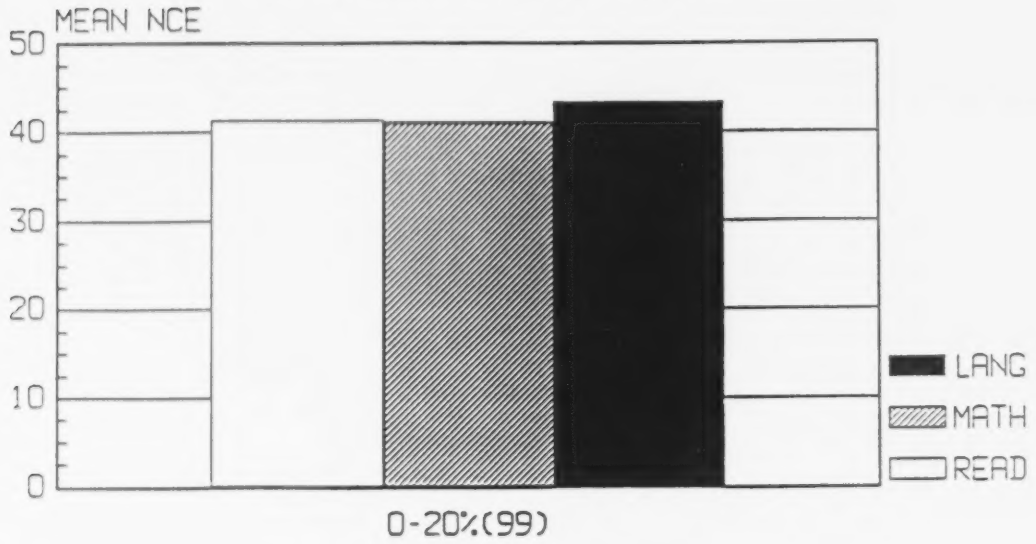
PERCENT HISPANIC STUDENTS

NATIVE AMERICAN MEAN NCE - 12TH GRADE
1987 ALL DISTRICTS IN ARIZONA



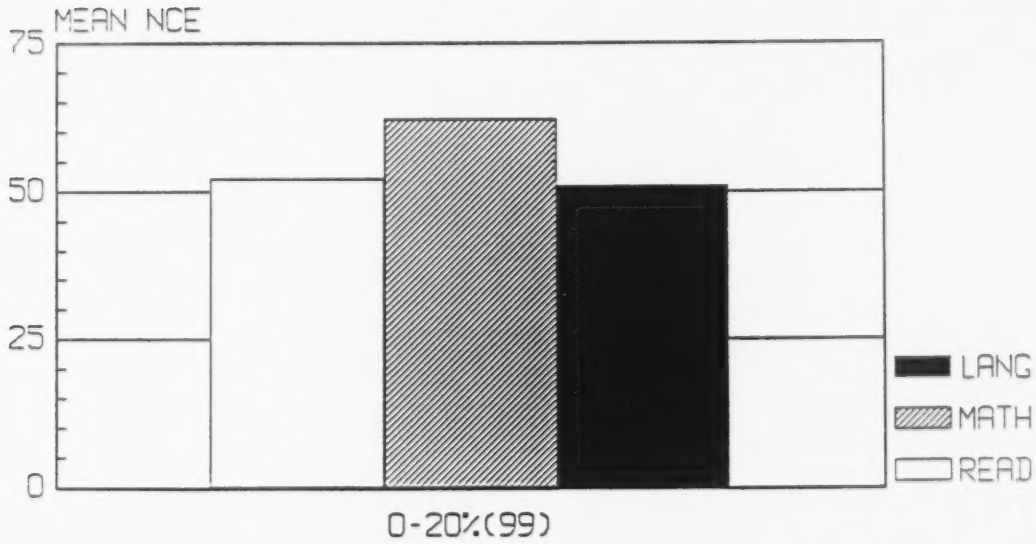
PERCENT NATIVE AMERICAN STUDENTS

BLACK MEAN NCE - 12TH GRADE 1987
ALL DISTRICTS IN ARIZONA



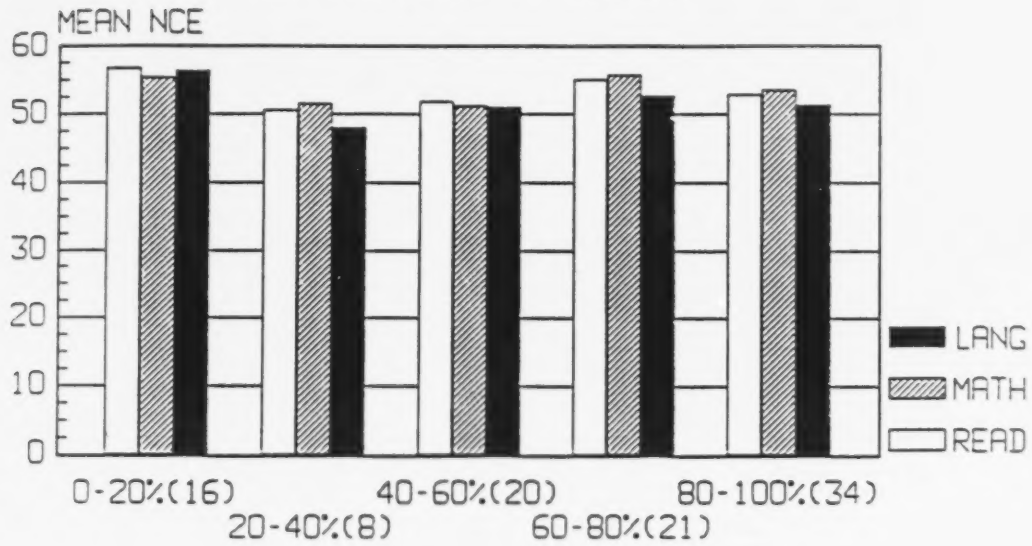
PERCENT BLACK STUDENTS

ASIAN MEAN NCE - 12TH GRADE 1987
ALL DISTRICTS IN ARIZONA



PERCENT ASIAN STUDENTS

WHITE MEAN NCE - 12TH GRADE 1987
ALL DISTRICTS IN ARIZONA



PERCENT WHITE STUDENTS

APPENDIX B

MEAN NCE AND STANDARD DEVIATION

BY ETHNICITY IN ALL DISTRICTS

12TH GRADE

1986 & 1987

The data in this appendix are a refinement and extension of data in the previous appendix in that they show the performance on test scores of all 12th grade students in all districts by ethnic group, by 20 percent interval and by year (1986 & 1987). In addition the mean NCE distribution is presented in the upper graph with the corresponding standard deviation in the lower graph, in order for the reader to be able to note the range of variability within each ethnic group and in each basic skill area within that ethnic group.

The number in parentheses following the ethnic group, plotted on the "X" axis, indicates the number of observations, that is, the number of districts in which the percent NCOUNT of students in the particular group is within the 20 percent interval for this pair of graphs.

Thus pages B-1 and B-2 contain graphs for all districts by ethnic 12th grade student populations in the 0-20 percent interval for the years 1986 and 1987 respectively.

With regard to B-1 and B-2, it is self-evident that Asian and White students score higher than the other three groups in all areas and that the mean scores do not differ significantly between years. In the lower graphs showing standard deviation, the standard deviation value in Math and Language for Asian students in 1986 is incredibly large. The reason for this large variation in performance is not known but one may surmise that the recent immigration of Asian people might have resulted in a large range in academic ability of the students in this population because of a delay in adapting to the language. It is interesting that the general ability in Math as indicated by the Mean NCE is still higher than that of White students. In the 1987 data, the standard deviation is more normal across the ethnic groups, except for the Hispanics and somewhat for the Native Americans, indicating a higher degree of uniformity in these two groups.

In the 20-40 percent interval, shown on pages B-3 & B-4, there are no districts having Asian and Black students in this percentage interval. The data are consistent between years as indicated by the similarity between all four graphs. Again, the White groups are distinctively different from the other two groups.

In the 40-50 percent interval, shown on pages B-5 & B-6, there is again a consistency in mean NCE between

years and between ethnic groups in each year. The White group is dominant and the differences between the Hispanic and Native American groups does not appear to be significant. In the measure of standard deviation, however, the differences are significant and somewhat erratic and unexplainable. In 1986, the standard deviation for the Hispanic group is extraordinary in Math and Language. A mechanical or computer error is suspected because the values are too high by about one decimal point of magnitude. The standard deviation for 1987 are all within the range of expected values except for the slight increase in Reading and Language for the Native American students which is not significant.

In the 60-80 percent interval (B-7 & B-8), the disparity between the performance in districts with Hispanic student populations in this range with those of White populations is quite definitive. It is noteworthy that there are no districts in this interval having Native American students in these percentages.

Similarly, in the 80-100 percent interval, the disparity between the White group and Hispanic group is consistent and considerably more pronounced when compared with the Native American group. The differences are in the order of one decile between each group. Again the standard deviation for Hispanics in the 1986 data are suspect. Most likely an error was made in computer input.

On the basis of this set of data, it is evident that in districts having low (0-20%) ethnic enrollments across the five ethnic groups, SAT scores are lower in absolute values and there is a lower degree of variation between groups. In districts with higher (60-80% & 80-100%) ethnic populations, the disparity between segregated schools have students who perform at distinctly different levels on standardized tests in the areas of Reading, Math and Language.

APPENDIX B - APPENDICES

B-1 Mean NCE - 12th Grade - 1986 by Ethnicity of 0-20 Percent

B-1 Standard Deviation - 12th Grade - 1986 by Ethnicity of 0-20 Percent

B-2 Mean NCE - 12th Grade - 1987 by Ethnicity of 0-20 Percent

B-2 Standard Deviation - 12th Grade - 1986 by Ethnicity of 0-20 Percent

B-3 Mean NCE - 12th Grade - 1986 by Ethnicity of 20-40 Percent

B-3 Standard Deviation - 12th Grade - 1986 by Ethnicity of 20-40 Percent

B-4 Mean NCE - 12th Grade - 1987 by Ethnicity of 20-40 Percent

B-4 Standard Deviation - 12th Grade - 1987 by Ethnicity of 20-40 Percent

B-5 Mean NCE - 12th Grade - 1986 by Ethnicity of 40-60 Percent

B-5 Standard Deviation - 12th Grade - 1986 by Ethnicity of 40-60 Percent

B-6 Mean NCE - 12th Grade - 1987 by Ethnicity of 40-60 Percent

B-6 Standard Deviation - 12th Grade - 1987 by Ethnicity of 40-60 Percent

B-7 Mean NCE - 12th Grade - 1986 by Ethnicity of 60-80 Percent

B-7 Standard Deviation - 12th Grade - 1986 by Ethnicity of 60-80 Percent

B-8 Mean NCE - 12th Grade - 1987 by Ethnicity of 60-80 Percent

B-8 Standard Deviation - 12th Grade - 1986 by Ethnicity of 60-80 Percent

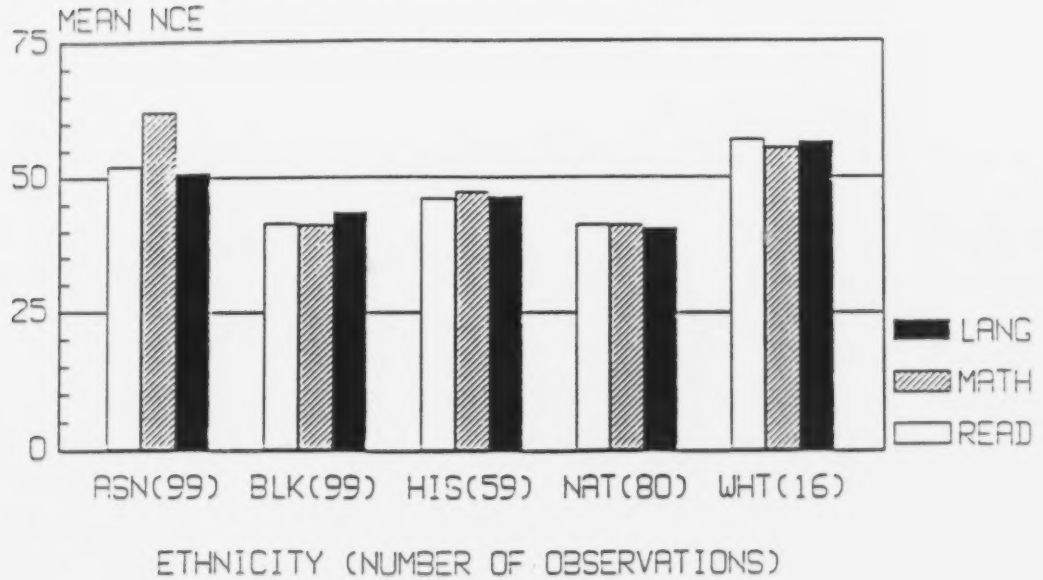
B-9 Mean NCE - 12th Grade - 1986 by Ethnicity of 80-100 Percent

B-9 Standard Deviation - 12th Grade - 1986 by Ethnicity of 80-100 Percent

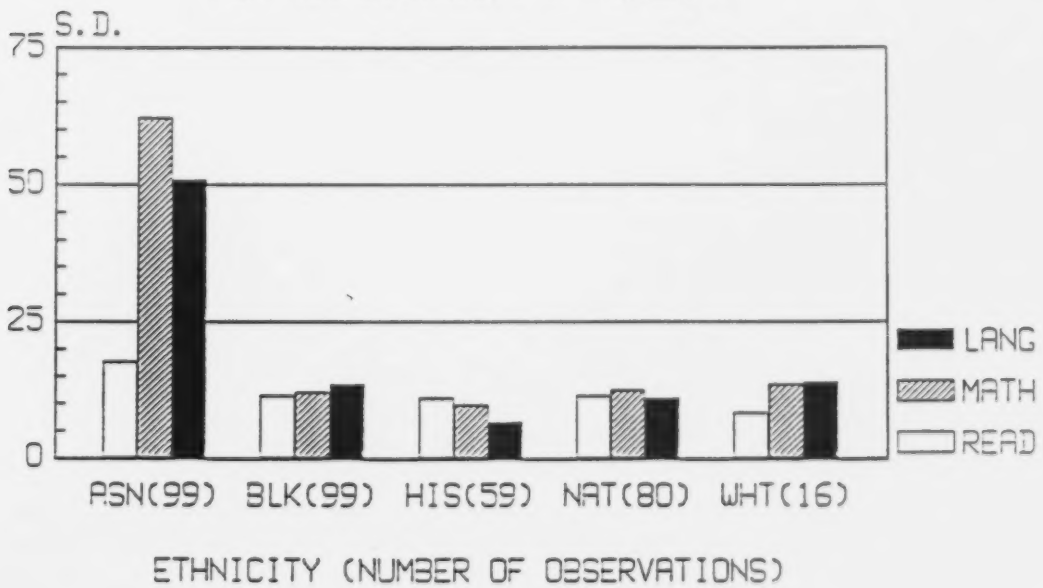
B-10 Mean NCE - 12th Grade - 1987 by Ethnicity of 80-100 Percent

B-10 Standard Deviation - 12th Grade - 1987 by Ethnicity of 80-100 Percent

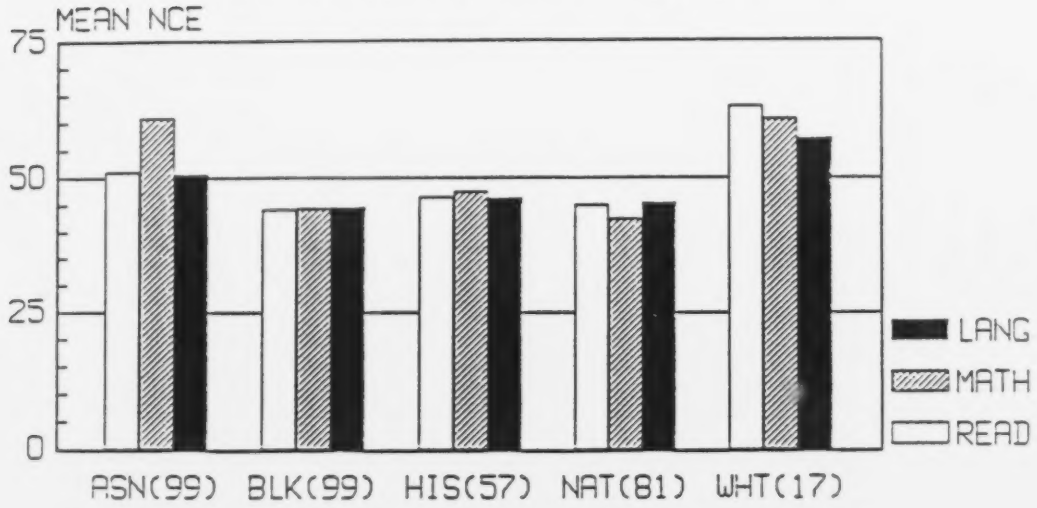
MEAN NCE - 12TH GRADE 1986
BY ETHNICITY OF 0-20 PERCENT
FOR ALL DISTRICTS IN ARIZONA



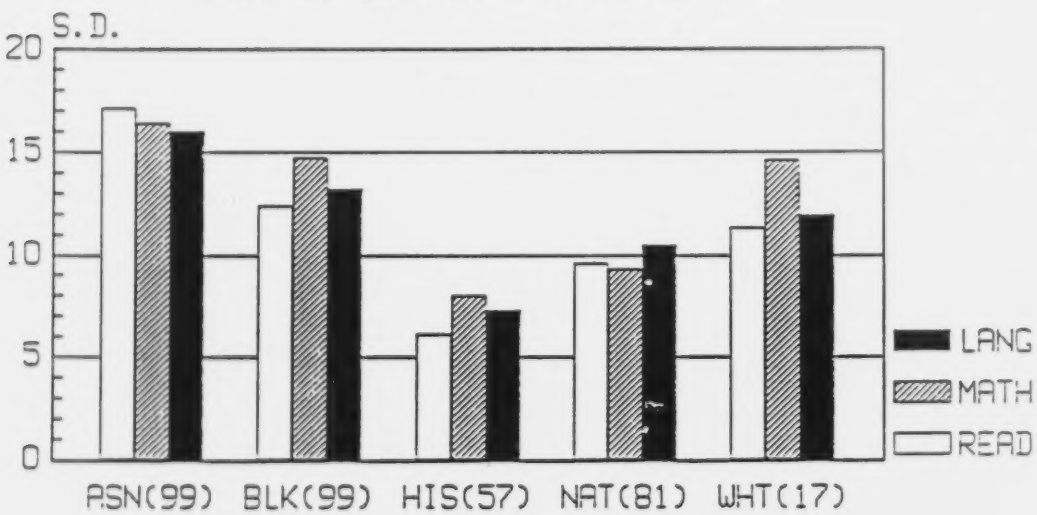
STANDARD DEVIATION - 12TH GRADE 1986
BY ETHNICITY OF 0-20 PERCENT
FOR ALL DISTRICTS IN ARIZONA



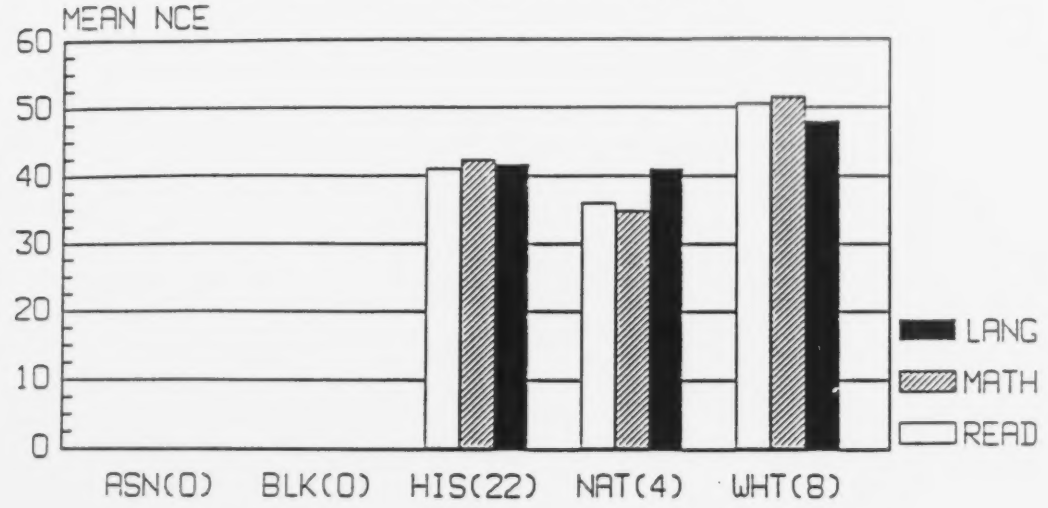
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY OF 0-20 PERCENT
FOR ALL DISTRICTS IN ARIZONA



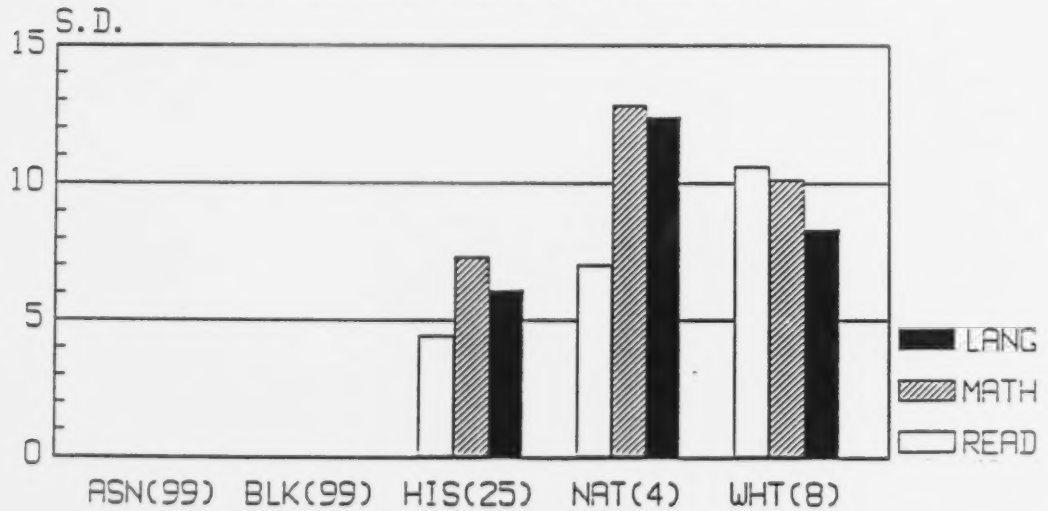
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY OF 0-20 PERCENT
FOR ALL DISTRICTS IN ARIZONA



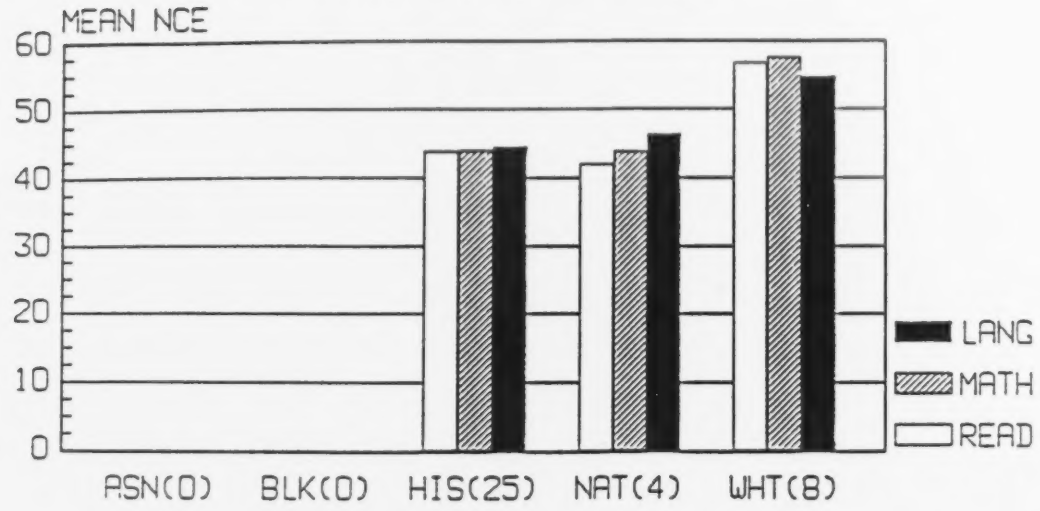
MEAN NCE - 12TH GRADE 1986
BY ETHNICITY OF 20-40 PERCENT
FOR ALL DISTRICTS IN ARIZONA



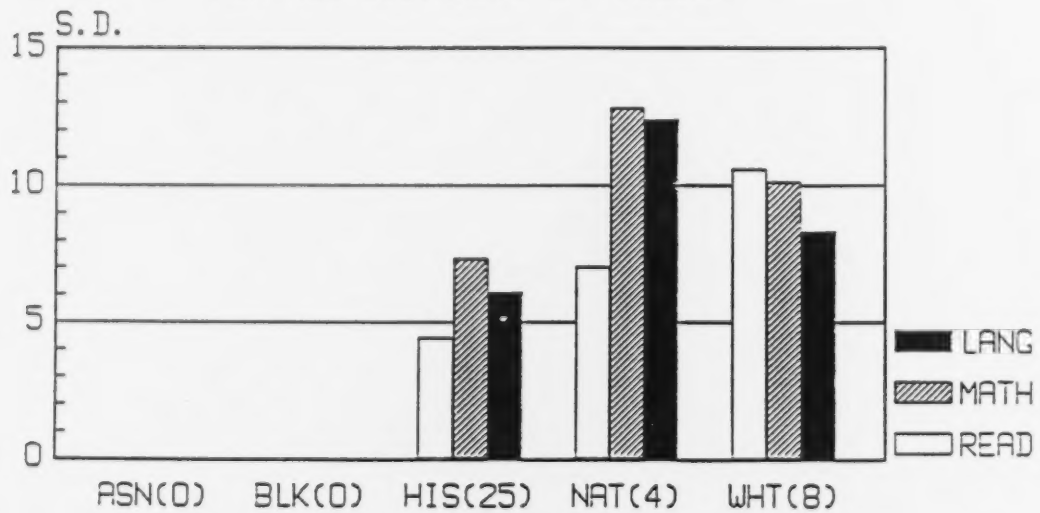
STANDARD DEVIATION - 12TH GRADE 1986
BY ETHNICITY OF 20-40 PERCENT
FOR ALL DISTRICTS IN ARIZONA



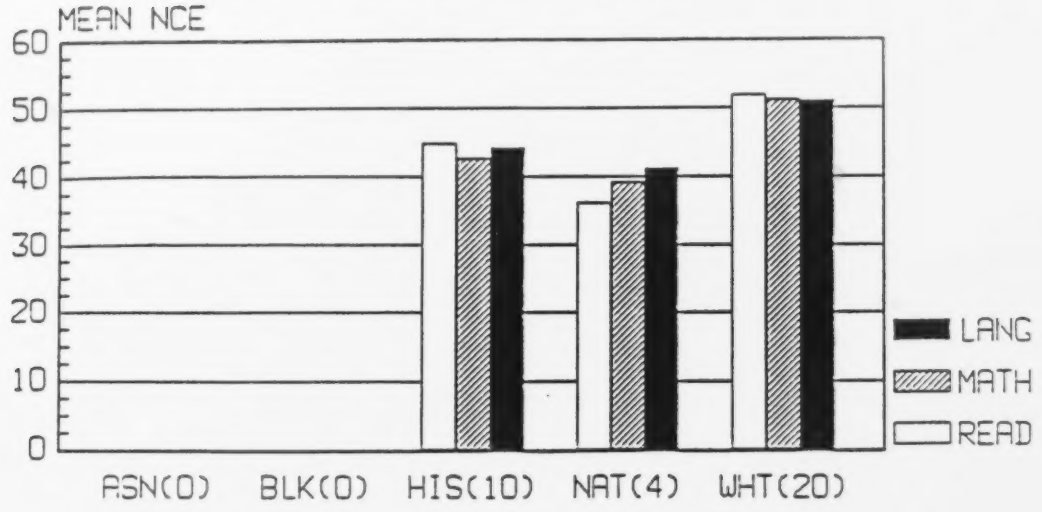
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY OF 20-40 PERCENT
FOR ALL DISTRICTS IN ARIZONA



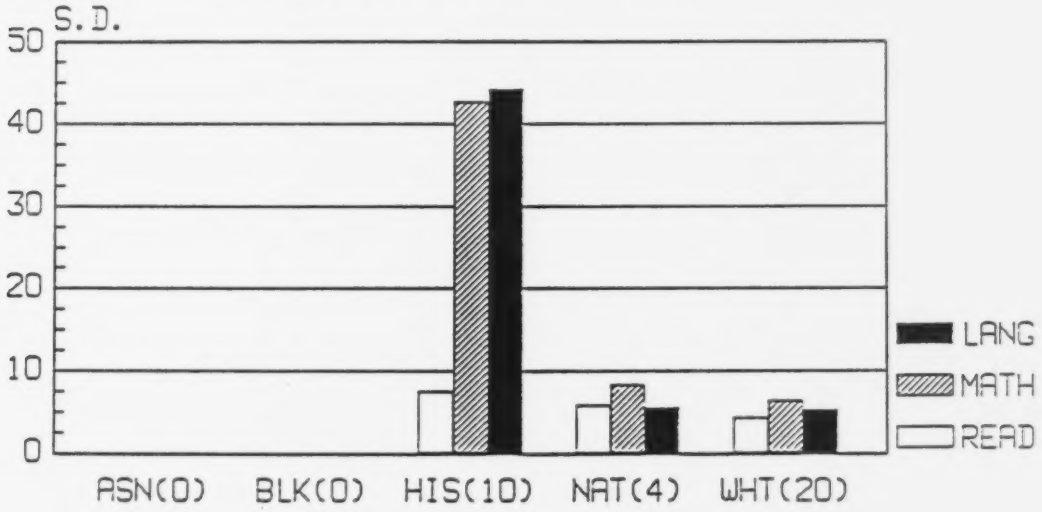
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY OF 20-40 PERCENT
FOR ALL DISTRICTS IN ARIZONA



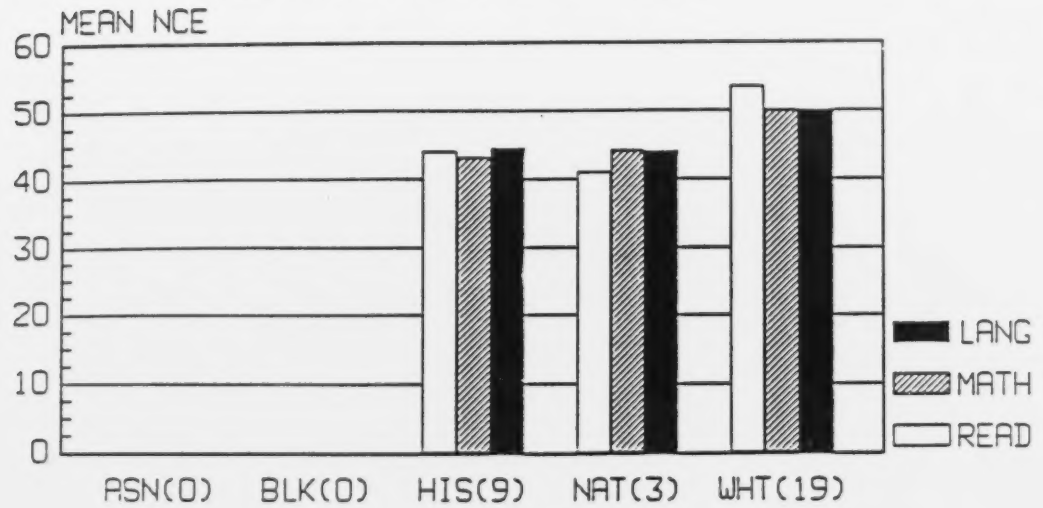
MEAN NCE - 12TH GRADE 1986
BY ETHNICITY OF 40-60 PERCENT
FOR ALL DISTRICTS IN ARIZONA



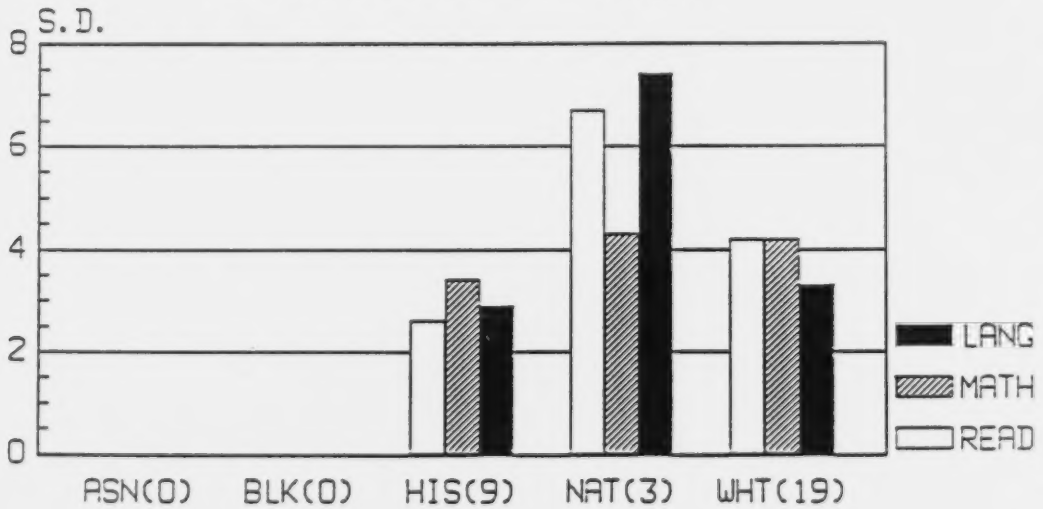
STANDARD DEVIATION - 12TH GRADE 1986
BY ETHNICITY OF 40-60 PERCENT
FOR ALL DISTRICTS IN ARIZONA



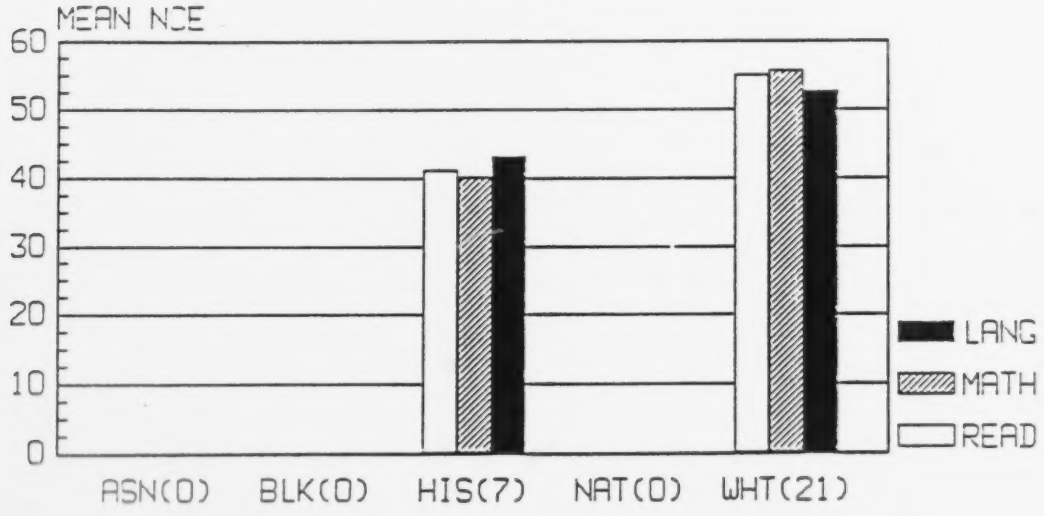
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY OF 40-60 PERCENT
FOR ALL DISTRICTS IN ARIZONA



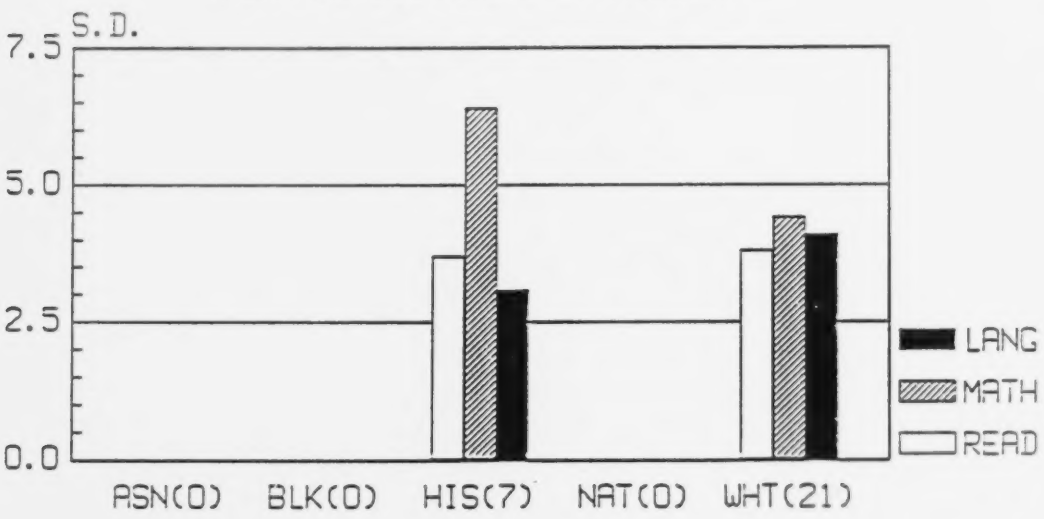
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY 40-60 PERCENT
FOR ALL DISTRICTS IN ARIZONA



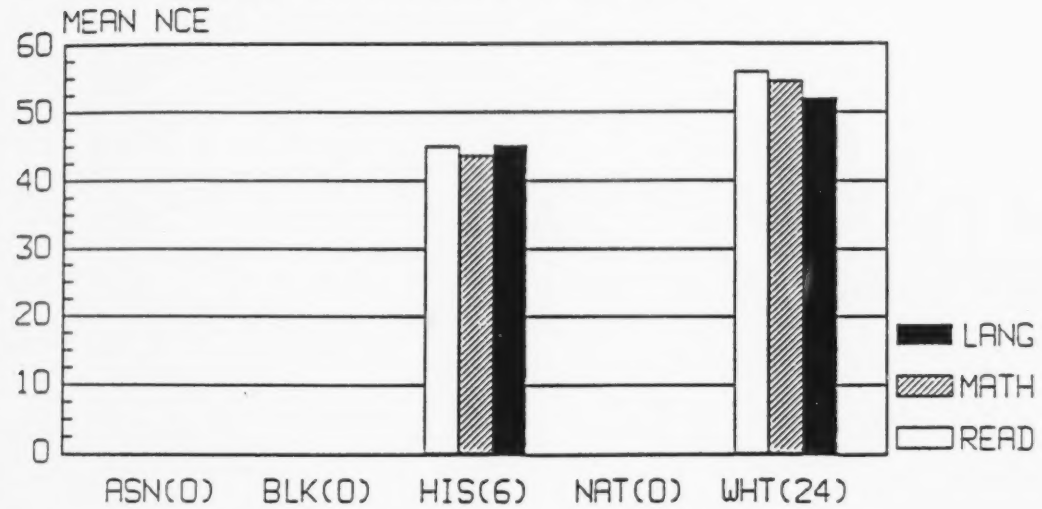
MEAN NCE - 12TH GRADE 1986
BY ETHNICITY OF 60-80 PERCENT
FOR ALL DISTRICTS IN ARIZONA



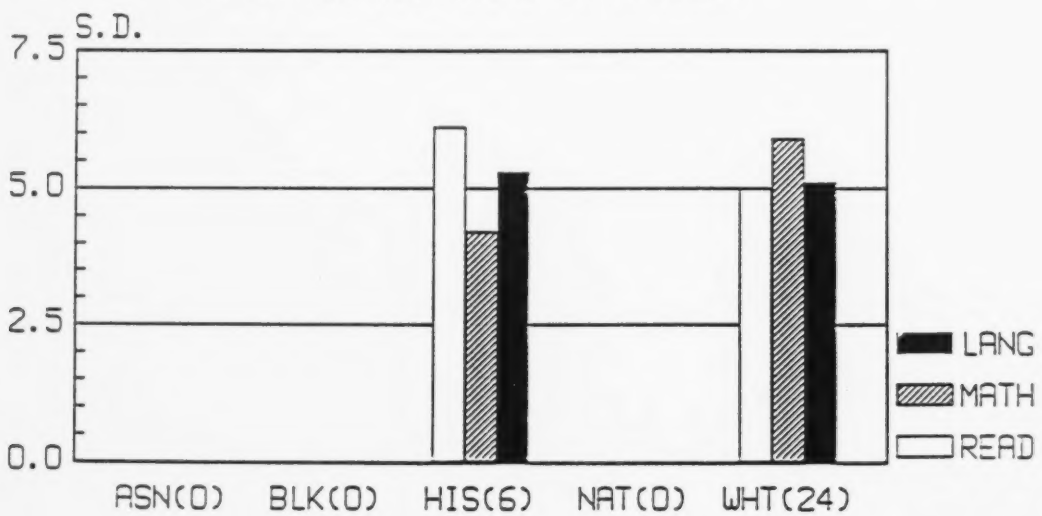
STANDARD DEVIATION - 12TH GRADE 1986
BY ETHNICITY OF 60-80 PERCENT
FOR ALL DISTRICTS IN ARIZONA



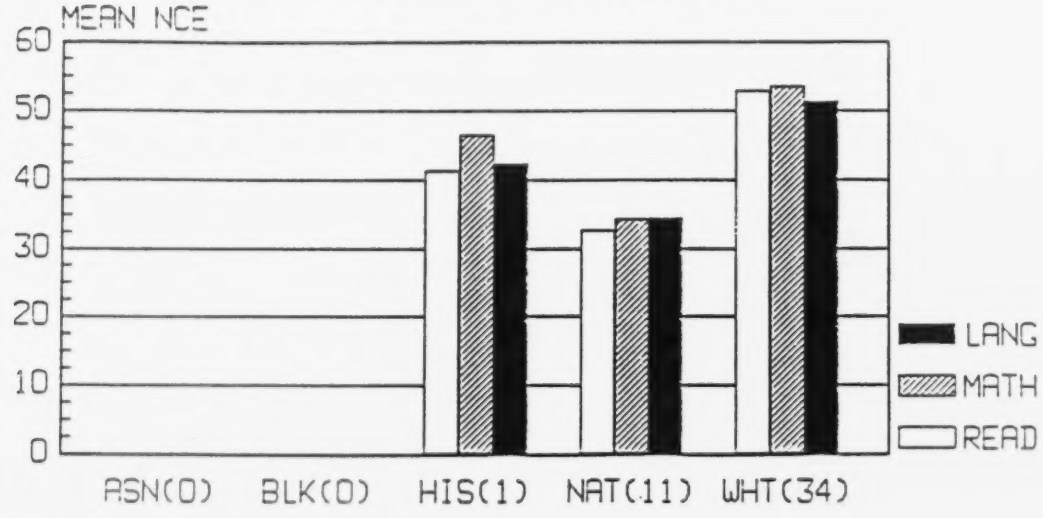
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY OF 60-80 PERCENT
FOR ALL DISTRICTS IN ARIZONA



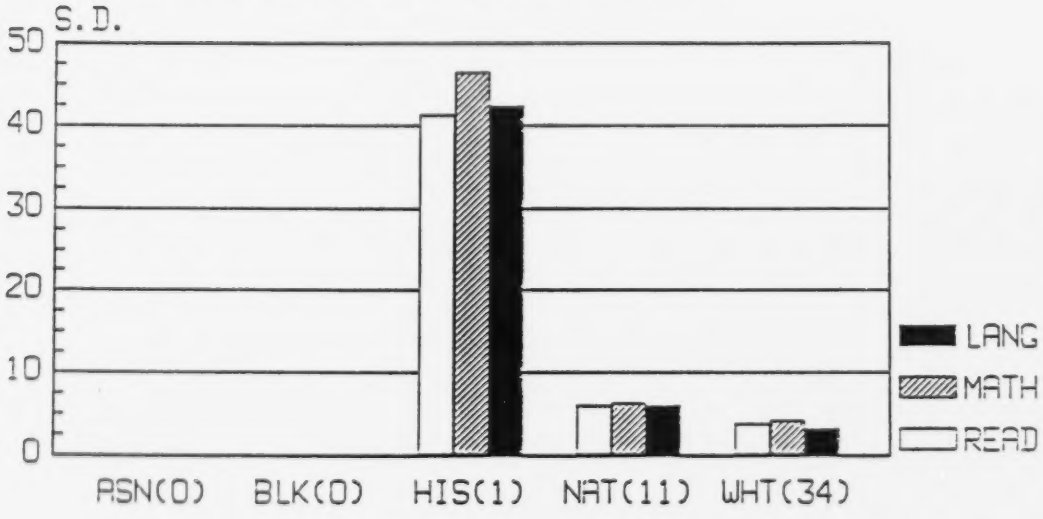
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY OF 60-80 PERCENT
FOR ALL DISTRICTS IN ARIZONA



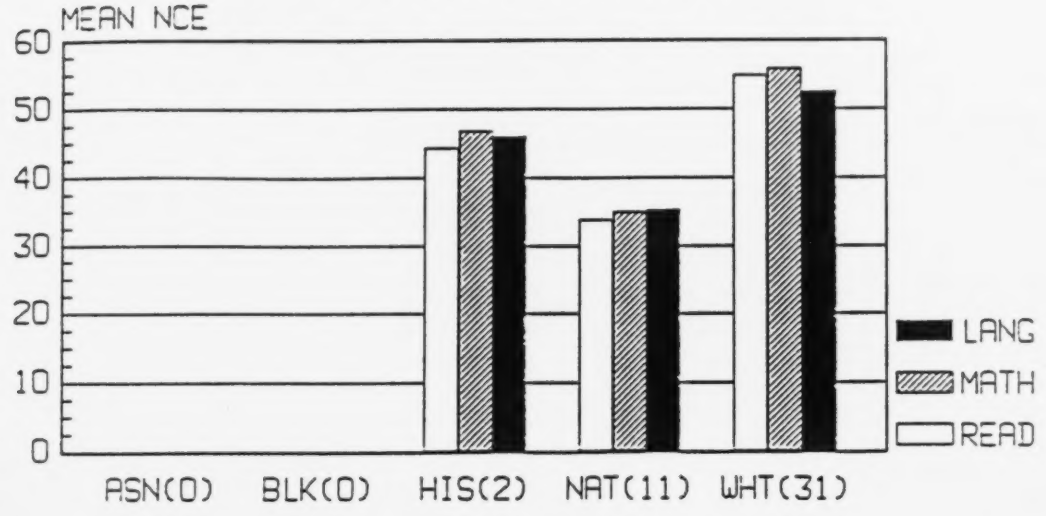
MEAN NCE - 12TH GRADE 1986
BY ETHNICITY OF 80-100 PERCENT
FOR ALL DISTRICTS IN ARIZONA



STANDARD DEVIATION - 12TH GRADE 1986
BY ETHNICITY OF 80-100 PERCENT
FOR ALL DISTRICTS IN ARIZONA

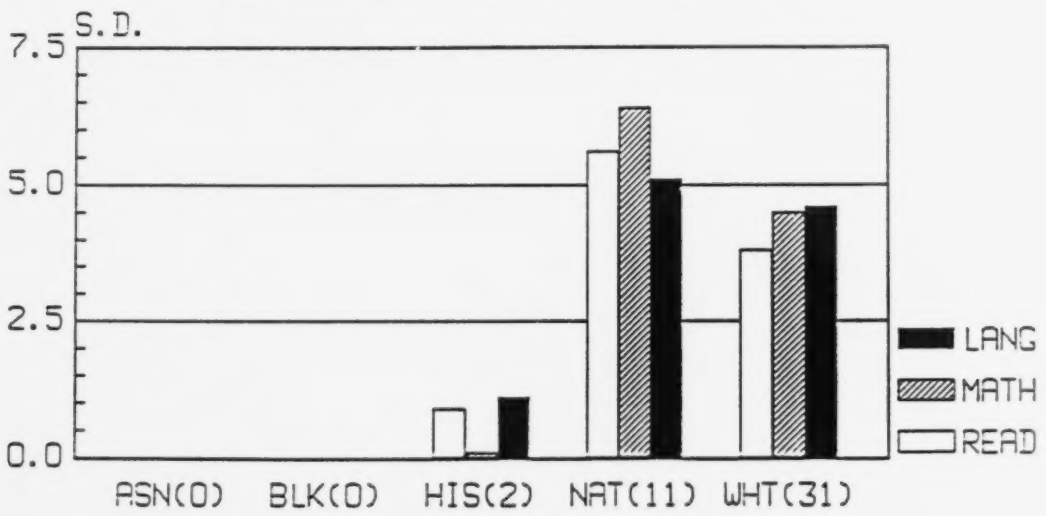


MEAN NCE - 12TH GRADE 1987
BY ETHNICITY OF 80-100 PERCENT
FOR ALL DISTRICTS IN ARIZONA



ETHNICITY (NUMBER OF OBSERVATIONS)

STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY OF 80-100 PERCENT
FOR ALL DISTRICTS IN ARIZONA



ETHNICITY (NUMBER OF OBSERVATIONS)

APPENDIX C

MEAN NCE AND STANDARD DEVIATION

FOR PHOENIX UNION HIGH SCHOOL DISTRICT SCHOOLS

12TH GRADE - 1987

Because of the large population, ethnic variability and general complexity of the Phoenix Union High School District, the mean NCE scores were analyzed by school rather than simply for the entire district. Although the Native American and Asian population is relatively small, the variation in Hispanic and Black populations is sufficiently significant to warrant closer study. The reader should note that the number in parentheses following the ethnic group on the "X" axis indicates the percent of students of that ethnic group in the 12th grade in that particular school. Also, the total number of students in the 12th grade is given at the top of each graph. Again, the standard deviation for each ethnic group by basic skill is provided in the lower graph on each page.

In analyzing the scores of the ethnic groups in the eight schools studied, it is evident that the very small percentages of Asian and Native American students do not warrant extensive generalization. Perhaps, the major point that can be made is that Asian students perform as well or better than White students and, in a few schools, Native American students also perform well. However, the numbers are too small to indicate defensible conclusions.

With regard to the Hispanic and Black populations, the results are more distinct. In general these two ethnic groups have consistently lower scores than their White cohort, but in some schools the difference is less distinct, e.g., Alhambra, Trevor Browne, Maryvale and North High.

In the former schools, the performance of Blacks is not significantly different from that of Whites; however, the percentage of Black students is too small to warrant generalization. In Carl Hayden and Central, the performance of Black students is distinctly lower than White students and their relative percentages are similar.

In South Mountain school, the percentage of Black students is highest and their scores are the lowest of any school in the district. Interestingly, the scores of the White students at South Mountain are among the highest of any school in the district, probably because South Mountain is a magnet school for the arts.

The performance of Hispanic students is consistently below that of White students, but in some schools, e.g., Trevor Brown, Maryvale and North, their performance is somewhat comparable.

Although further study is needed, it would appear that the concentration of Hispanics and Blacks may be correlative with their performance on basic skill test scores, that is, the greater the concentration, the lower the scores.

APPENDIX C - APPENDICES

C-1 Mean NCE by Ethnicity for Alhambra High School

C-1 Standard Deviation by Ethnicity for Alhambra High School

C-2 Mean NCE by Ethnicity for Camelback High School

C-2 Standard Deviation by Ethnicity for Camelback High School

C-3 Mean NCE by Ethnicity for Trevor Browne High School

C-3 Standard Deviation by Ethnicity for Trevor Browne High School

C-4 Mean NCE by Ethnicity for Central High School

C-4 Standard Deviation by Ethnicity for Central High School

C-5 Mean NCE by Ethnicity for Carl Hayden High School

C-5 Standard Deviation by Ethnicity for Carl Hayden High School

C-6 Mean NCE by Ethnicity for Maryvale High School

C-6 Standard Deviation by Ethnicity for Maryvale High School

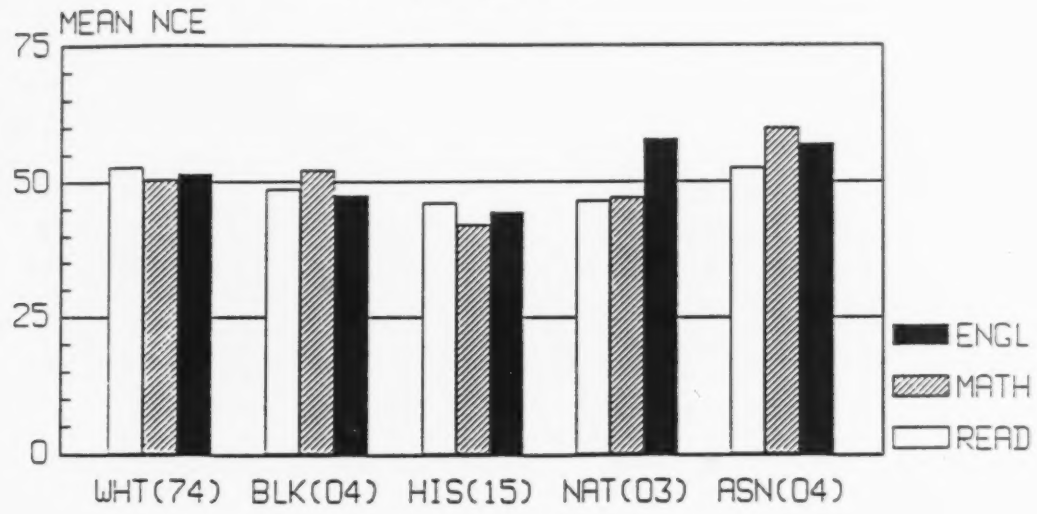
C-7 Mean NCE by Ethnicity for North High School

C-7 Standard Deviation by Ethnicity for North High School

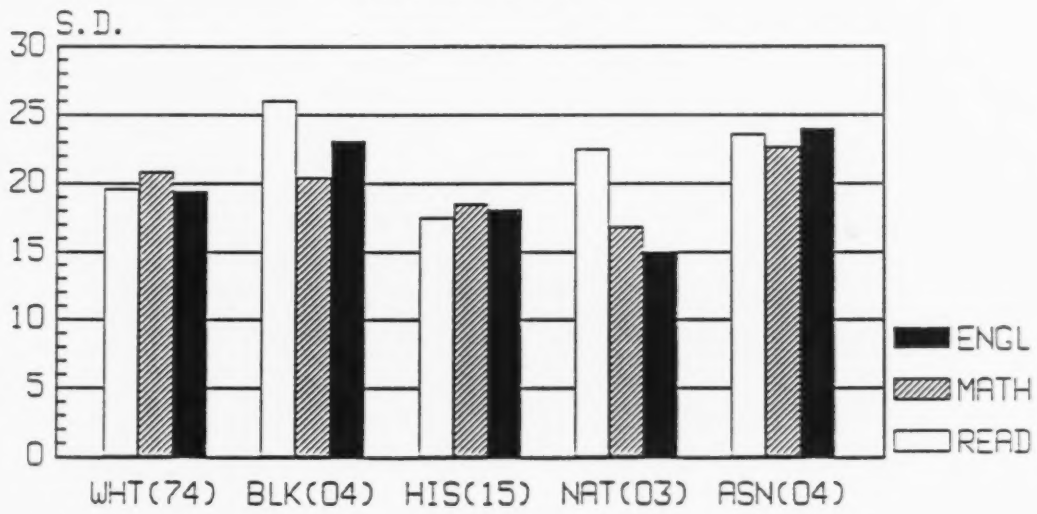
C-8 Mean NCE by Ethnicity for South Mountain High School

C-8 Standard Deviation by Ethnicity for South Mountain High School

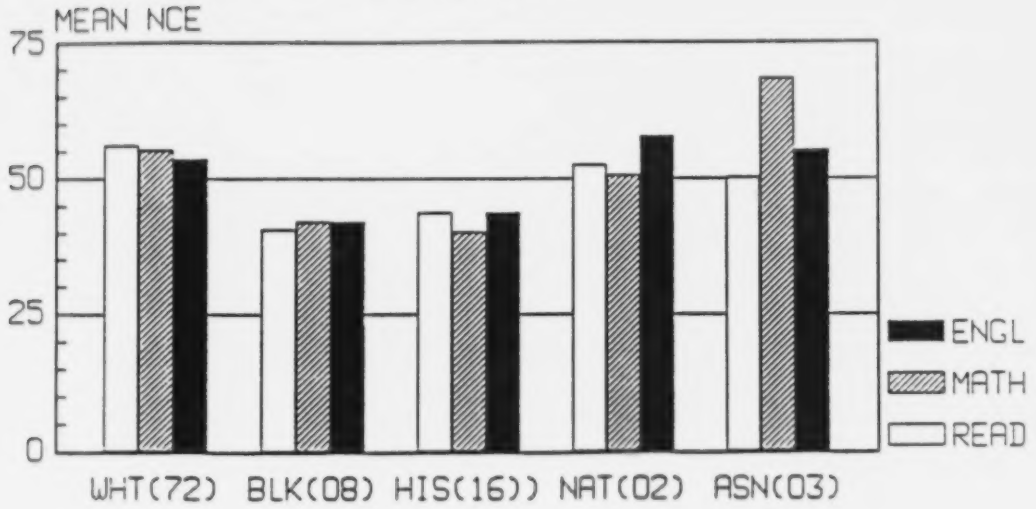
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR ALHAMBRA HIGH SCHOOL
345 STUDENTS



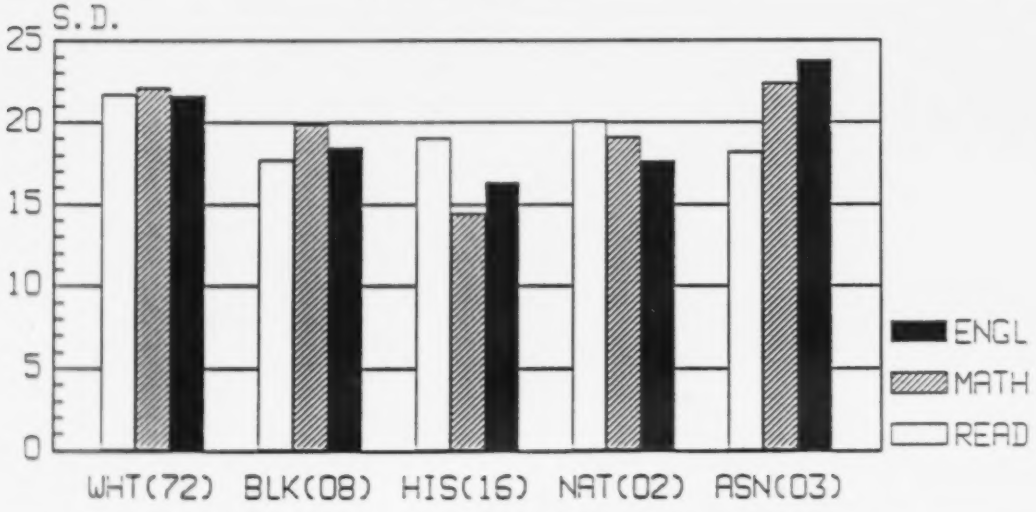
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR ALHAMBRA HIGH
345 STUDENTS



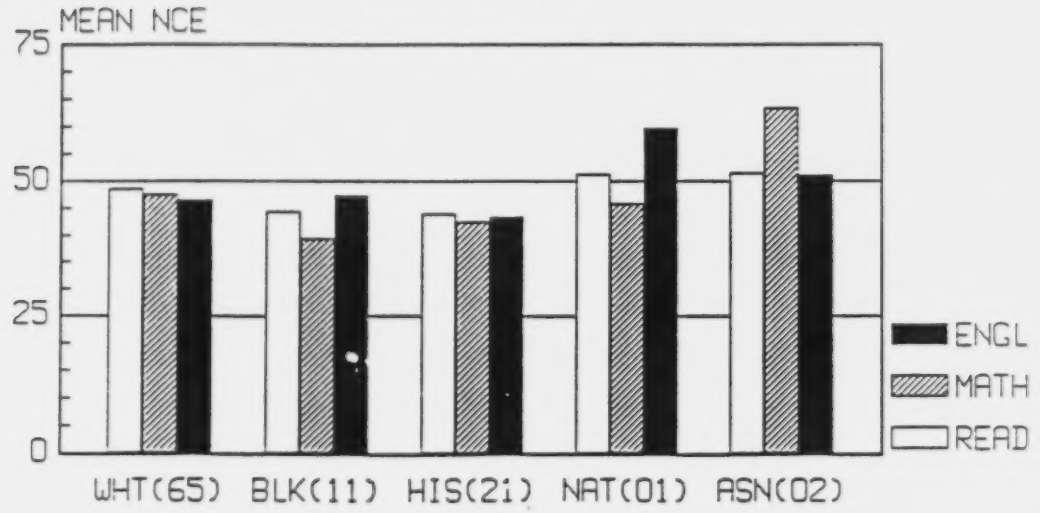
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR CAMELBACK
352 STUDENTS



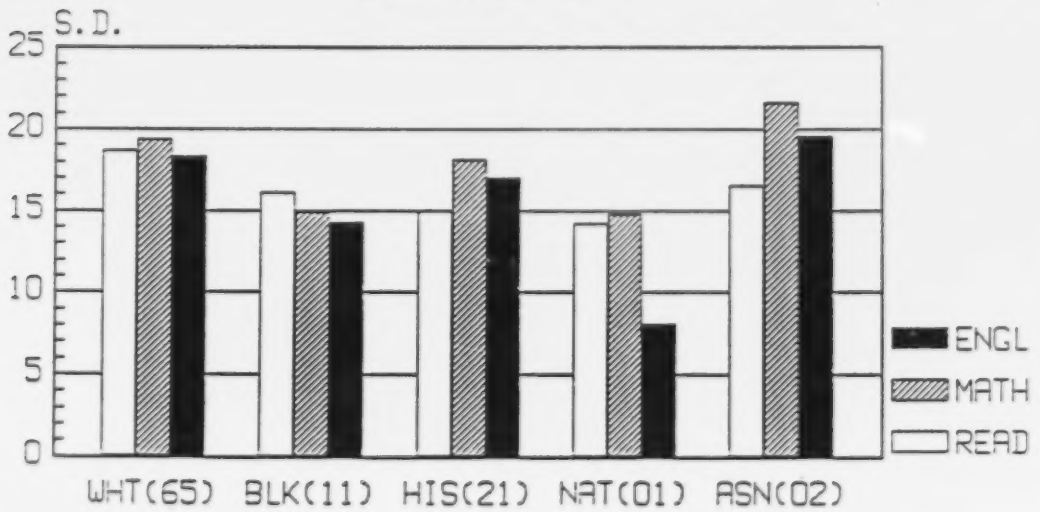
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR CAMELBACK HIGH
352 STUDENTS



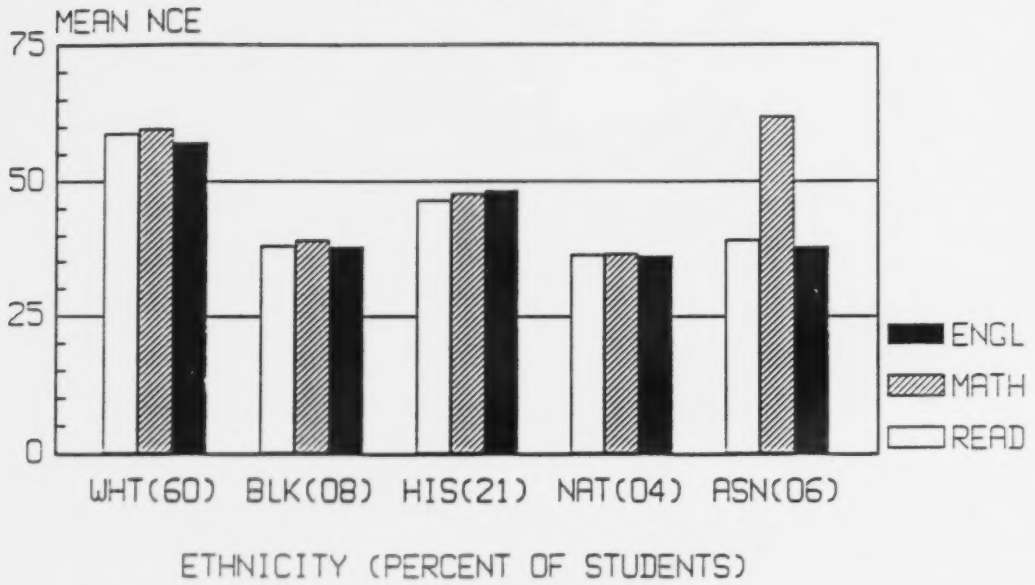
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR TREVOR BROWNE
366 STUDENTS



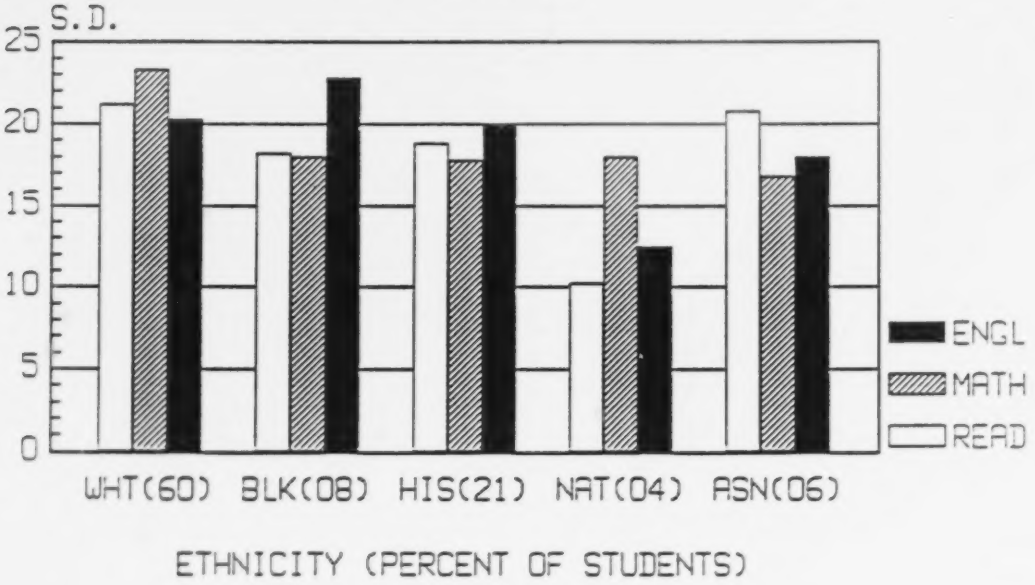
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR TREVOR BROWNE
366 STUDENTS



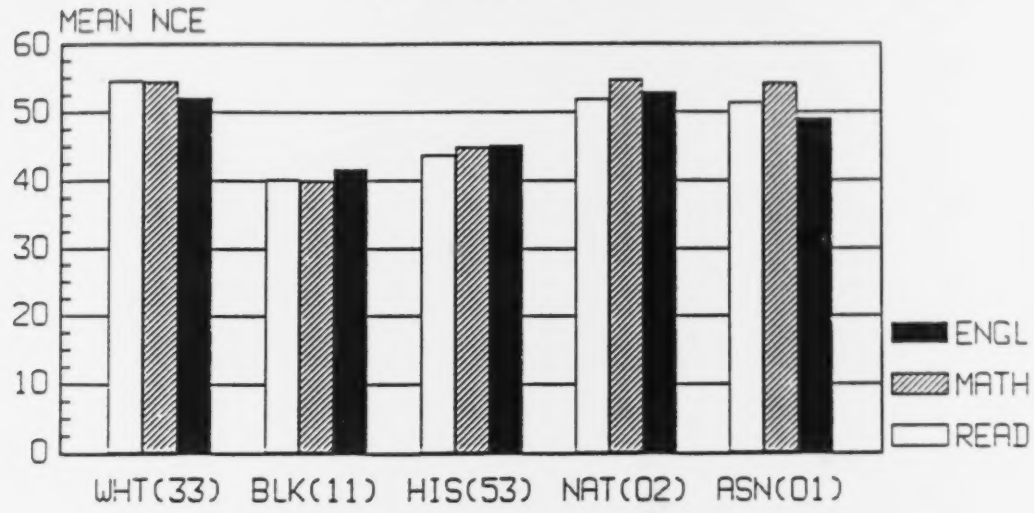
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR CENTRAL HIGH
296 STUDENTS



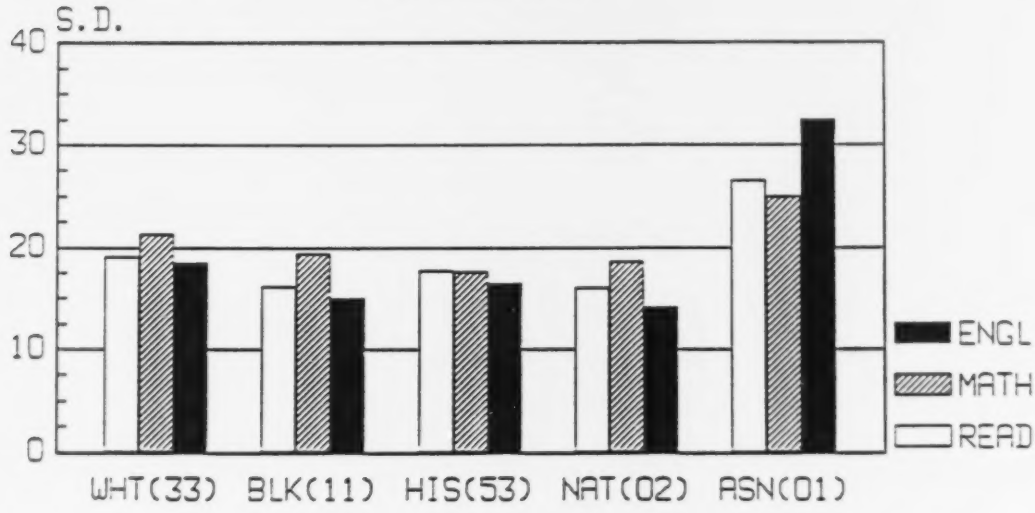
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR CENTRAL HIGH
296 STUDENTS



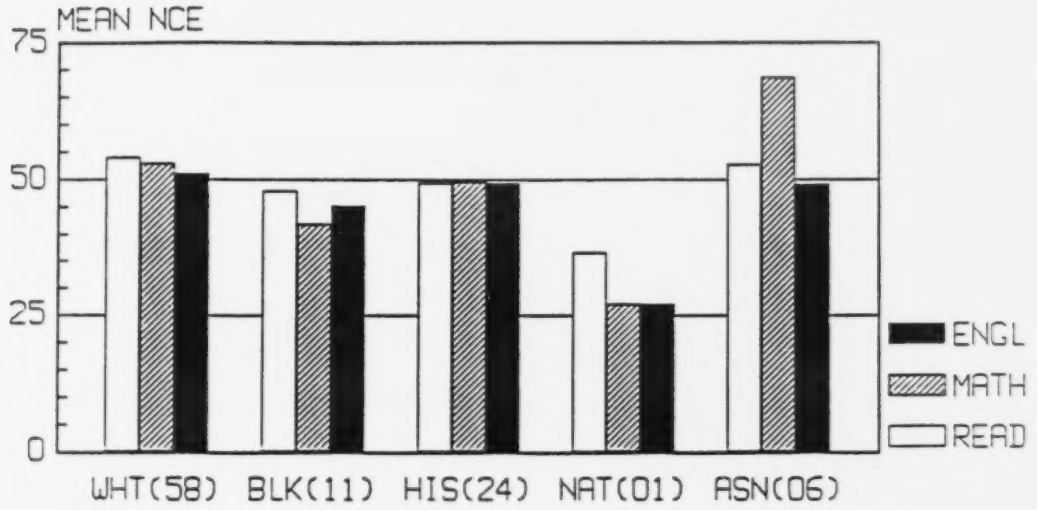
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR CARL HAYDEN
332 STUDENTS



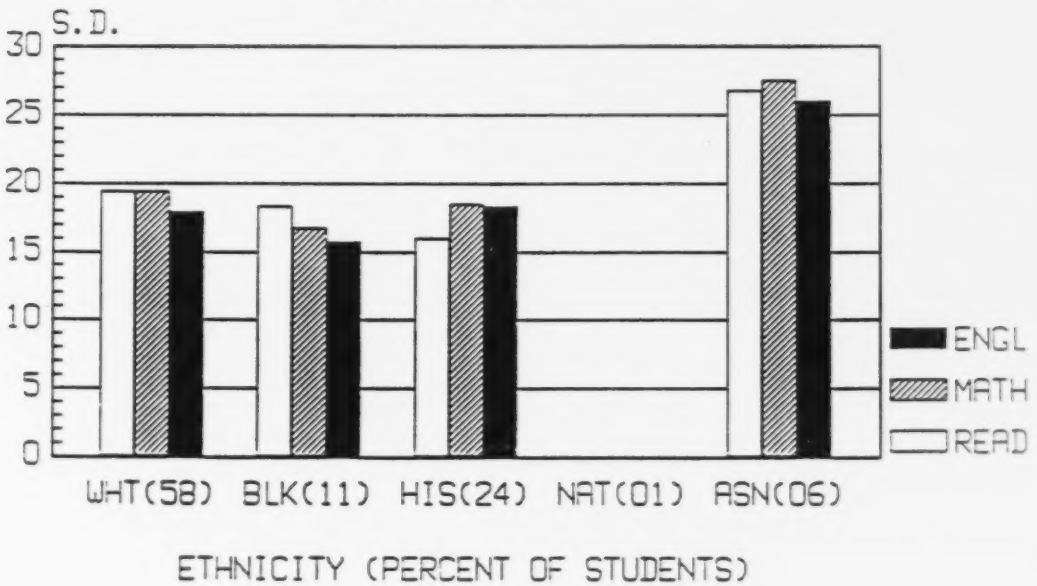
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR CARL HAYDEN
332 STUDENTS



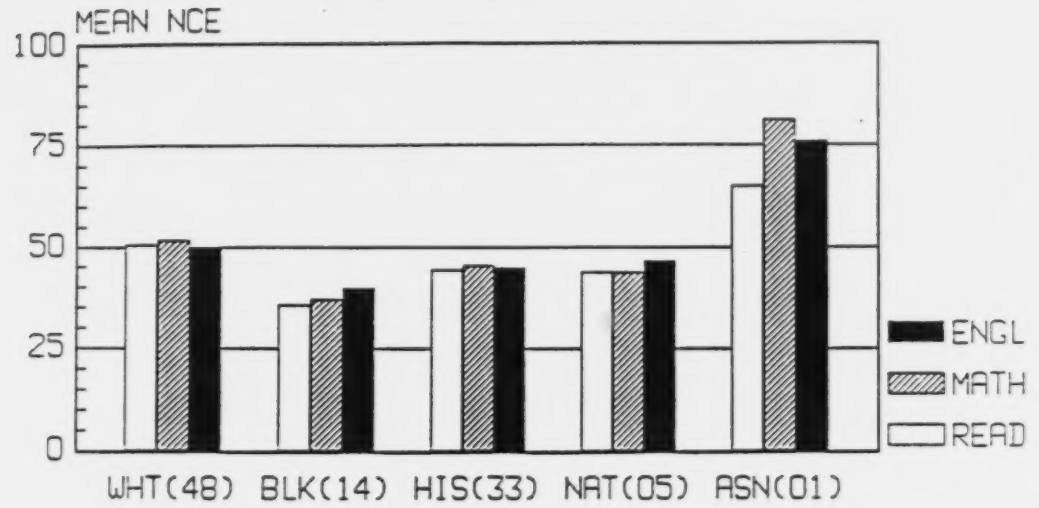
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR MARYVALE
223 STUDENTS



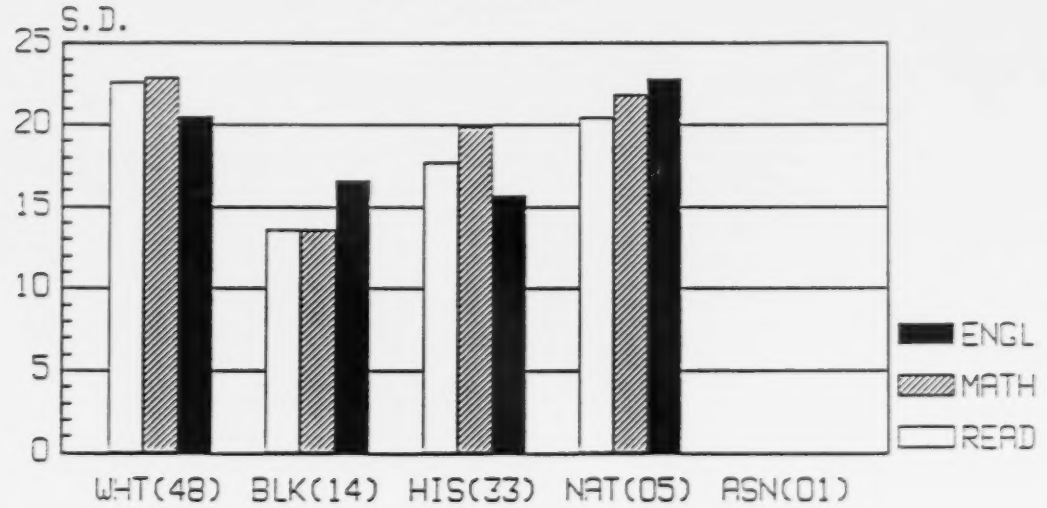
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR MARYVALE HIGH
223 STUDENTS



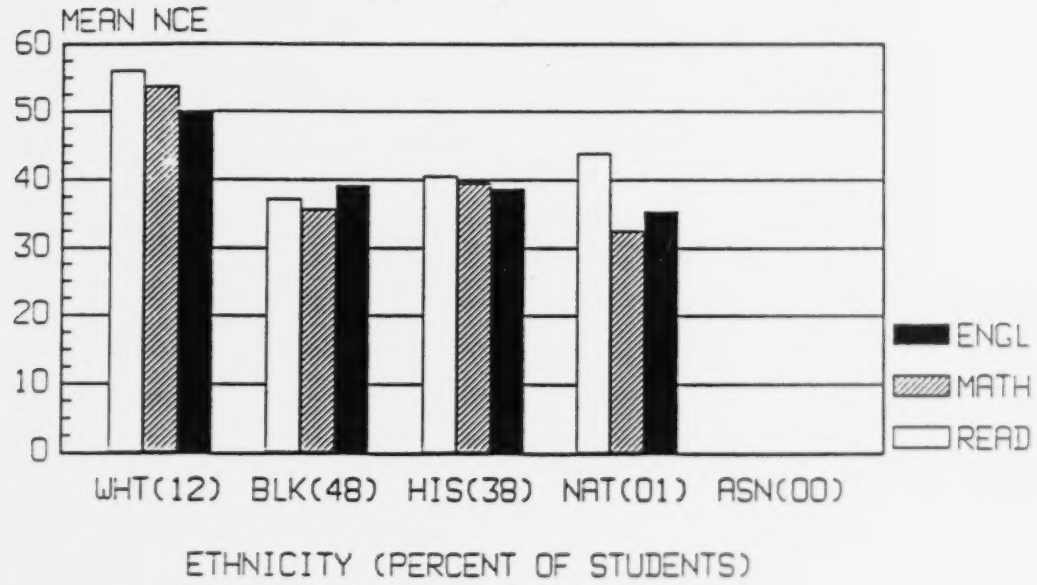
MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR NORTH HIGH
248 STUDENTS



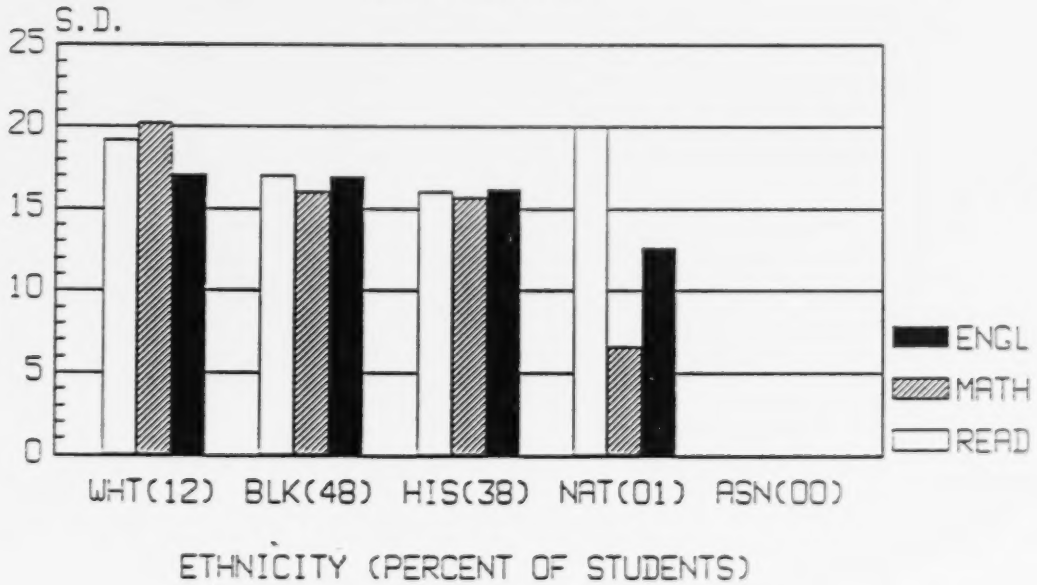
STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR NORTH HIGH
248 STUDENTS



MEAN NCE - 12TH GRADE 1987
BY ETHNICITY FOR SOUTH MOUNTAIN
304 STUDENTS



STANDARD DEVIATION - 12TH GRADE 1987
BY ETHNICITY FOR SOUTH MOUNTAIN
304 STUDENTS



APPENDIX D

MEAN NCE FOR SCHOOLS WITH LARGE ETHNIC ENROLLMENTS

12TH GRADE - 1987

In this set of data, the attempt was made to analyze basic skills performance of the three major ethnic groups in districts having SMALL percentages but LARGE actual numbers of the particular ethnic group. Three sets of data were thus compiled:

1. The scores of Hispanic students (pages D-1, D-2 and D-3) were analyzed and the ethnic groups entered on the "X" axis in ASCENDING order of percentages. The number in parentheses indicates the number of schools in the district with percent of Hispanic students in the particular category.

   Except for the Phoenix Union District, it is immediately evident that the performance on the SAT test decreases in direct relation to the increase in percentage of Hispanic students in the districts. Even though the number of schools may be small, it must be kept in mind that the total number of students in these districts is large and thus the total NCOUNT of Hispanic students is also large.

2. With regard to Native American students, only districts off the reservation were analyzed in this study set, primarily because data were needed in districts having a mixture of ethnic groups, rather that a univariate distribution as would be obtained in districts on the reservations. Thus, districts bordering the reservation were purposely chosen.

3. Only three districts (pages D-5 and D-6) were analyzed with regard to Black students and in every district the performance of the students appears to be related to their concentration in the district. Again, the number in parenthesis following the ethnic percentage on the "X" axis indicates the number of schools in the particular percentage interval.

APPENDIX D - APPENDICES

D-1 Hispanic Mean NCE for Phoenix Union High School District

D-1 Hispanic Mean NCE for Tempe High School District

D-2 Hispanic Mean NCE for Glendale High School District

D-2 Hispanic Mean NCE for Mesa High School District

D-3 Hispanic Mean NCE for Tucson Unified School District

D-4 Native American Mean NCE by Descending Percent in the Casa Grande, Flagstaff, Globe, Winslow and Holbrook Districts

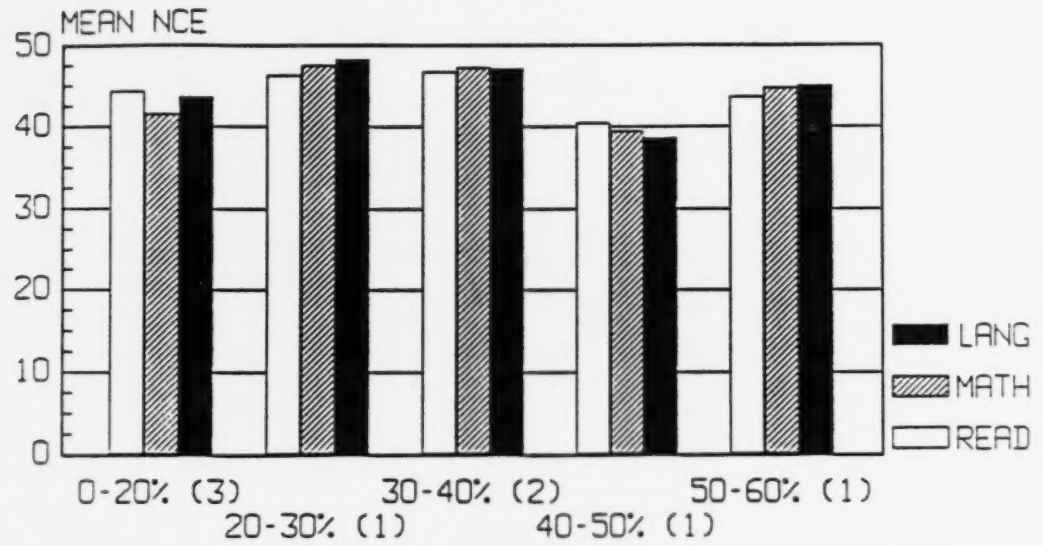
D-4 Native American Mean NCE for 9th Grade 1987 by Descending Percent in the Casa Grande, Flagstaff, Globe, Winslow and Holbrook Districts

D-5 Black Mean NCE for Phoenix Union High School District

D-5 Black Mean NCE for Tempe High School District

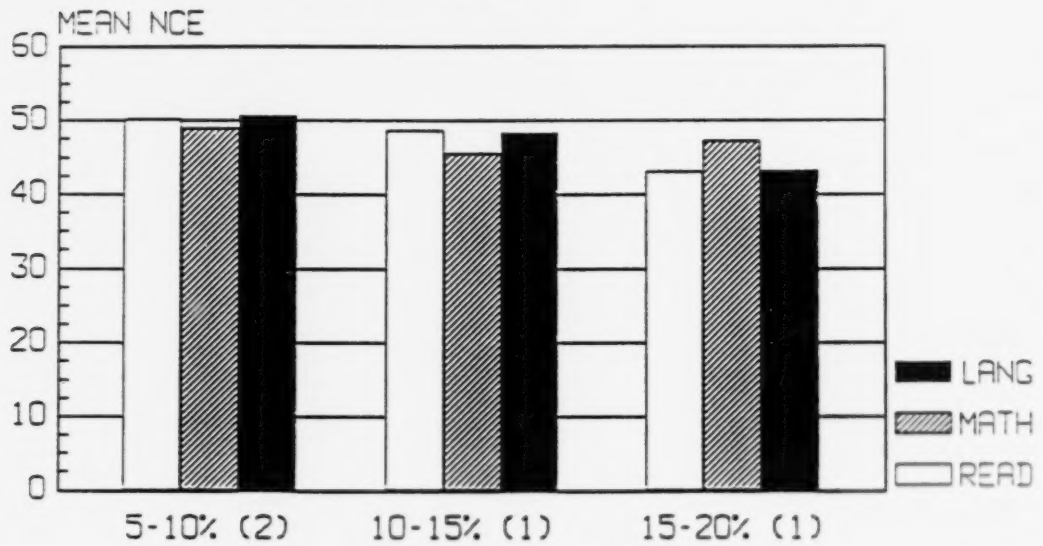
D-6 Black Mean NCE for Tucson Unified School District

HISPANIC MEAN NCE - 12TH GRADE 1987
PHOENIX UNION



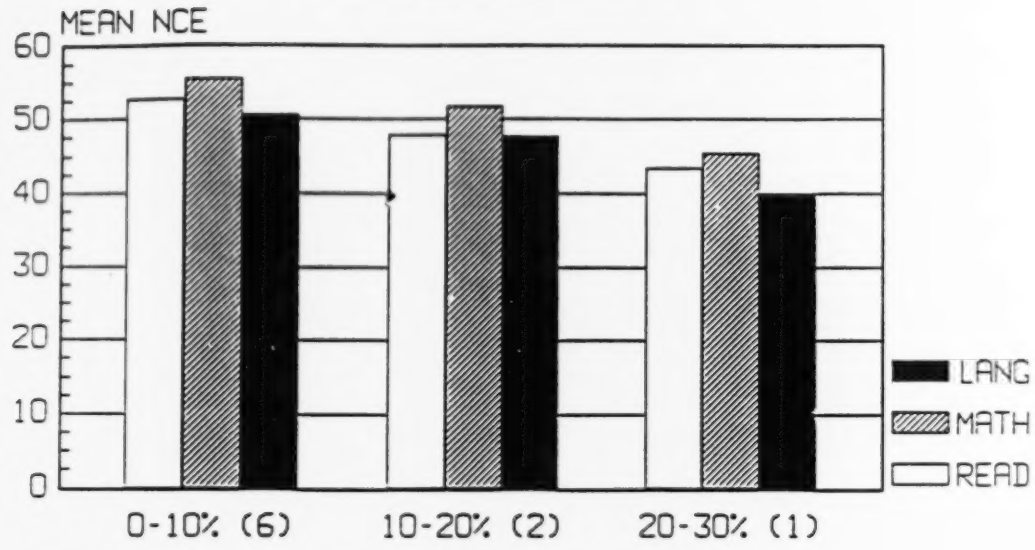
PERCENT HISPANIC STUDENTS

HISPANIC MEAN NCE - 12TH GRADE 1987
TEMPE



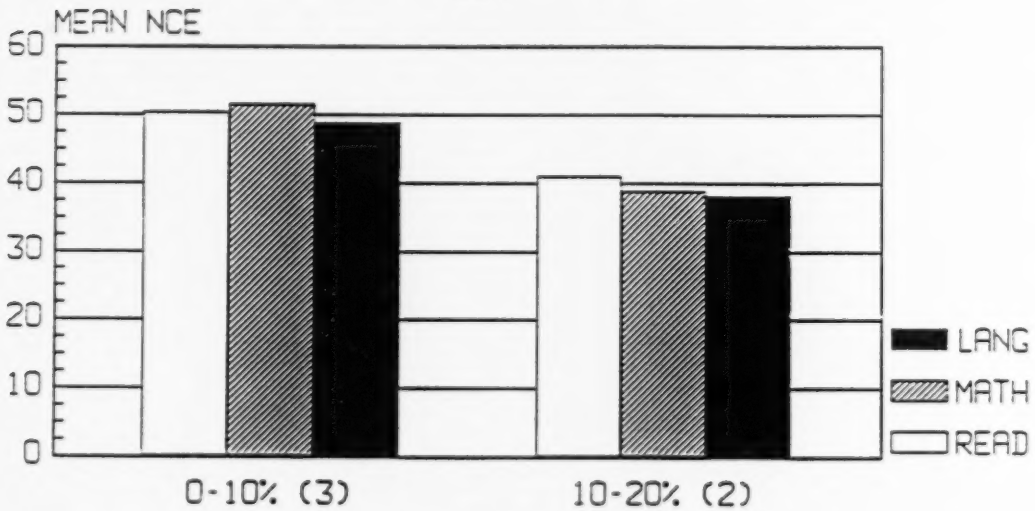
PERCENT HISPANIC STUDENTS

HISPANIC MEAN NCE -12TH GRADE 1987
GLENDALE



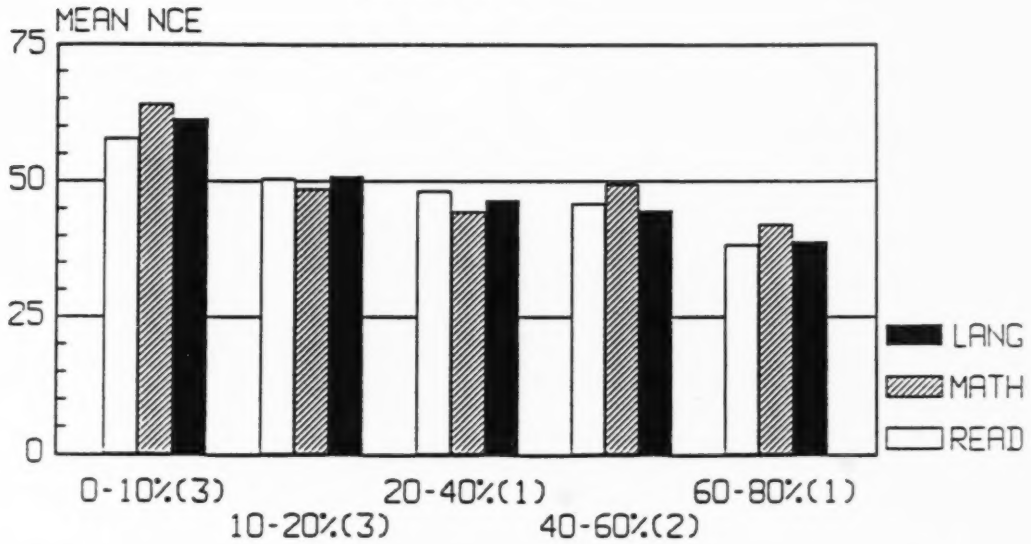
PERCENT HISPANIC STUDENTS

HISPANIC MEAN NCE - 12TH GRADE 1987
MESA



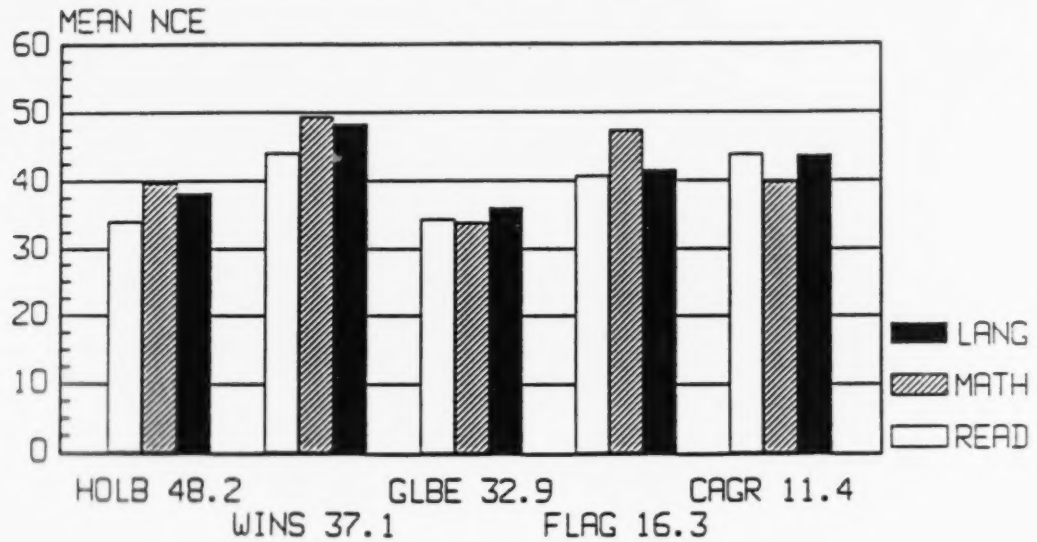
PERCENT HISPANIC STUDENTS

HISPANIC MEAN NCE - 12TH GRADE 1987
TUCSON UNIFIED



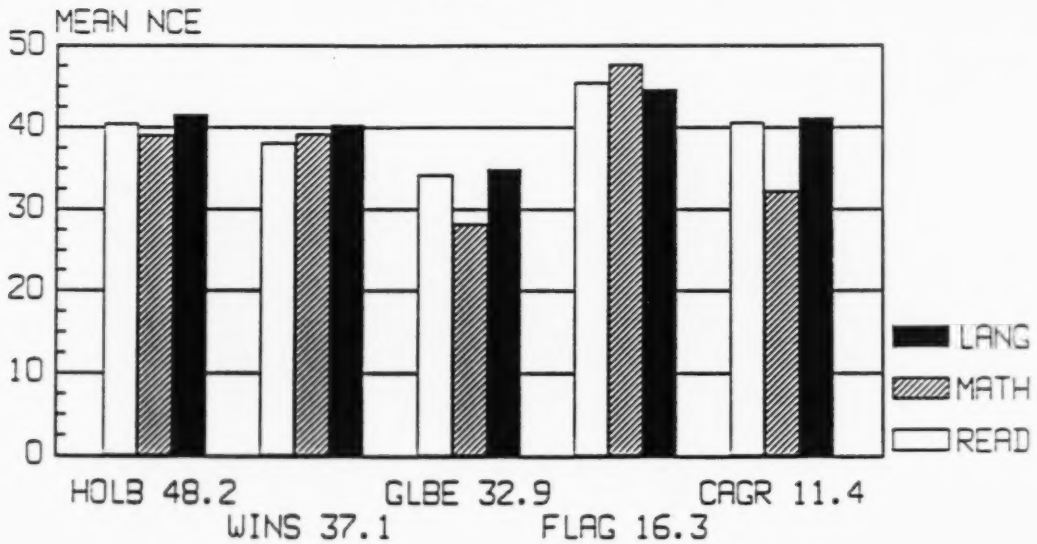
PERCENT HISPANIC STUDENTS

NATIVE AMERICAN MEAN NCE - 12TH GRADE
1987



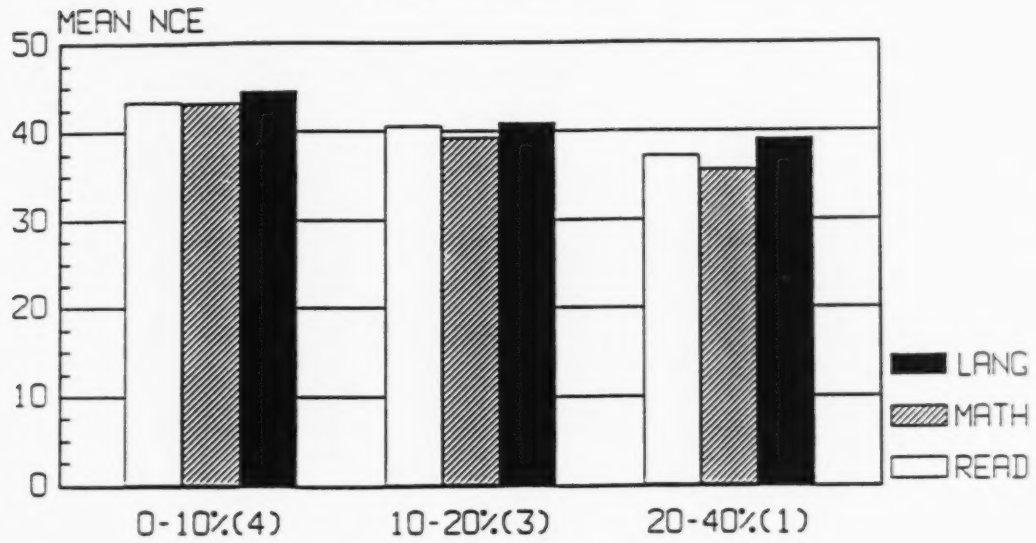
HIGH SCHOOL DISTRICTS (PERCENT NAT AM)

NATIVE AMERICAN MEAN NCE - 9TH GRADE
1987



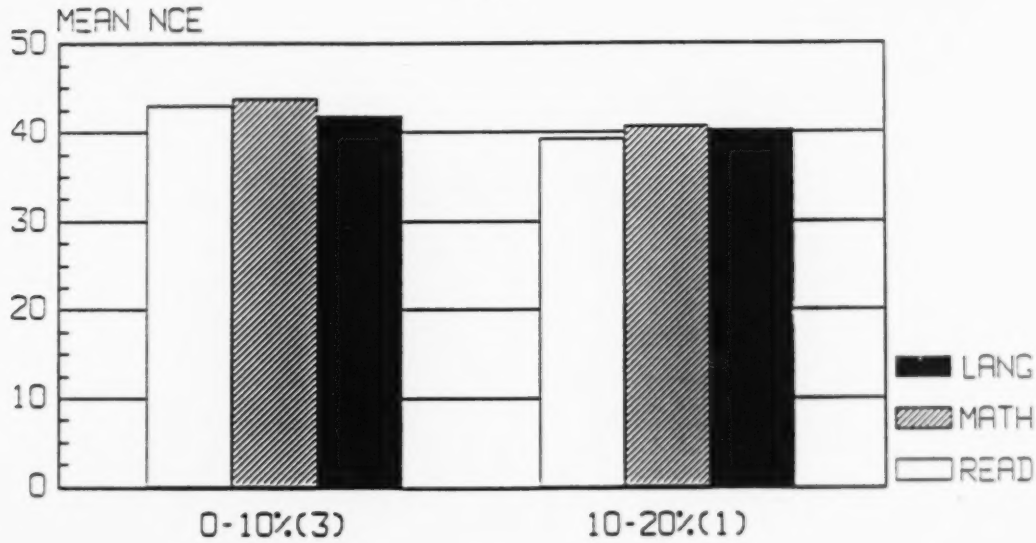
HIGH SCHOOL DISTRICTS (PERCENT NAT AM)

BLACK MEAN NCE - 12TH GRADE 1987
PHOENIX UNION



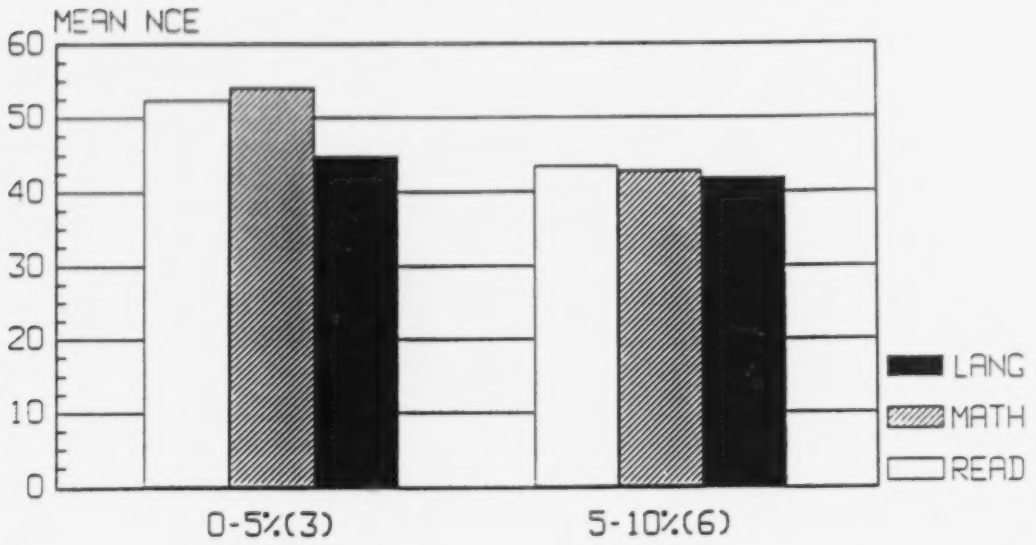
PERCENT BLACK STUDENTS

BLACK MEAN NCE - 12TH GRADE 1987
TEMPE



PERCENT BLACK STUDENTS

BLACK MEAN NCE - 12TH GRADE 1987
TUCSON UNIFIED



PERCENT BLACK STUDENTS

APPENDIX E

MEAN NCE BY PRIMARY HOME LANGUAGE

12TH GRADE - 1987

Three school districts were identified in which the primary home language was Spanish or in which Spanish was spoken exclusively. These districts are Yuma, Nogales and Douglas. The graph on page E-1 thus compares the scores in the three basic skills in three student groups in which the primary home language is either English/Spanish or Spanish exclusively. The results are at best inconclusive, although it is evident that in homes where Spanish is spoken exclusively, the performance is lower. This relationship is most evident in the Yuma district.

In further analysis of this parameter, a study was made of districts having various levels of percentages of students whose primary home language is Spanish. These students were first grouped in small percentage intervals as shown on the upper graph on page E-2. Because a slight but discernable trend was detected, a second compilation was made using larger intervals in order to "smooth out" minor variations. The resulting compilation is shown on the lower graph and strongly suggests that performance on the SAT test increases with increase in the percentage of students whose primary home language is Spanish.

Finally, in the graph on page E-3, the Mean NCE for Hispanic students in the five largest high school districts, previously studied, were compared on the basis of those schools having less than 10 percent Hispanic students with those schools having more than 10% Hispanic students. Again, the distinction is definite, Hispanic students in schools with more than 10 percent Hispanic enrollments have lower SAT scores than their classmates in the schools having less than 10 percent Hispanic students.

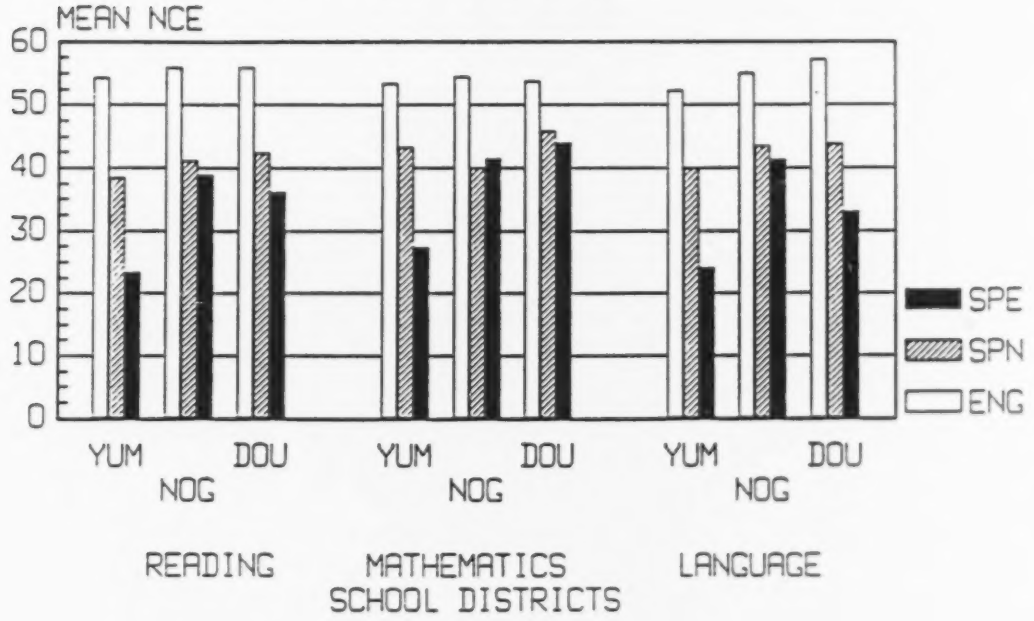
APPENDIX E - APPENDICES

E-1 Mean NCE in Reading, Math and language in the Yuma, Nogales and Douglas School District

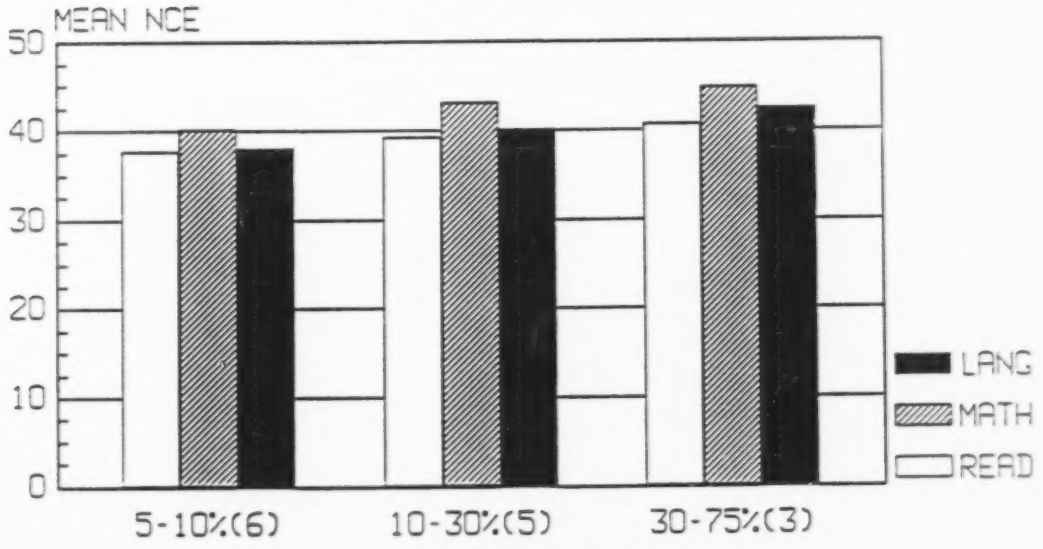
E-2 Mean NCE - Spanish - Increasing Percent of Students

E-3 Hispanic Mean NCE by Percent Hispanic Students and by Subject

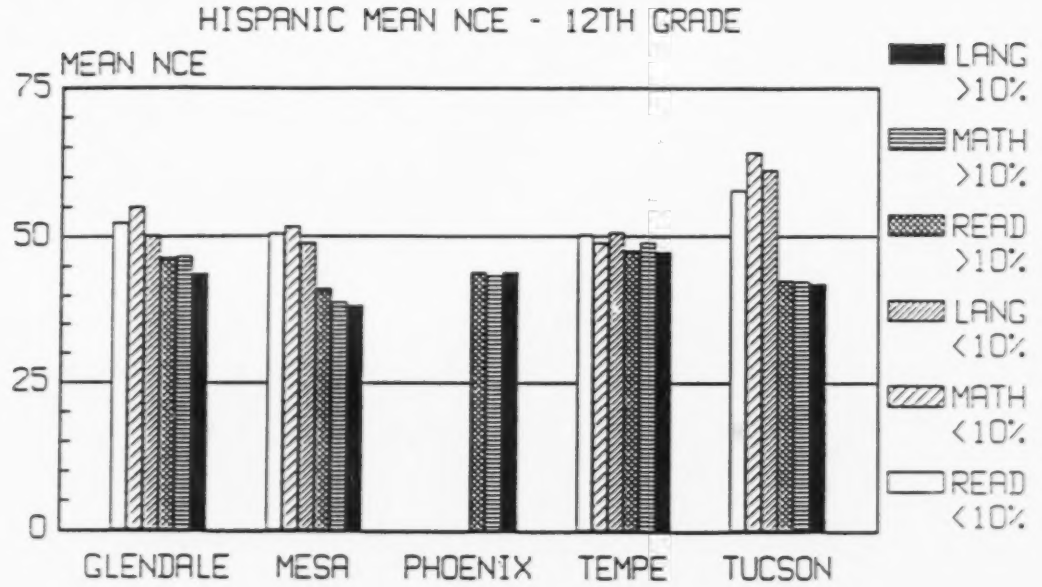
MEAN NCE BY PRIMARY HOME LANGUAGE
12TH GRADE 1987



PRIMARY HOME LANGUAGE - SPANISH
12TH GRADE 1987



PERCENT STUDENTS (NUMBER OF DISTRICTS)



HIGH SCHOOL DISTRICTS BY
PERCENT HISPANIC STUDENTS AND SUBJECT